The Electragist

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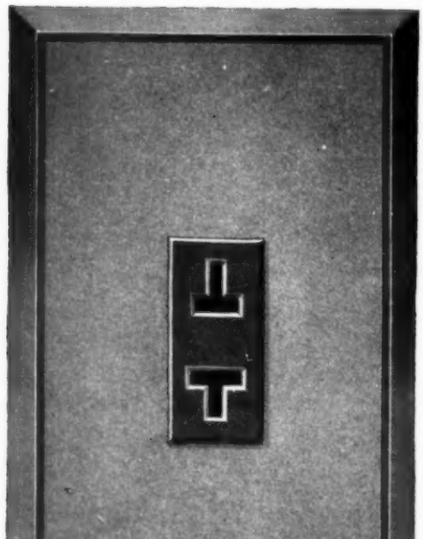

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The Electragist

(The National Electrical Contractor and The Electrical Contractor-Dealer)

Official Journal of the Association of Electragists—International

Vol. 26 MARCH, 1927 No. 5

The Handwriting on the Wall

By S. B. WILLIAMS, Editor The Electragist

HAVE electric light and power companies the right to conduct commercial activities in a manner unfair to other retailers? We shall soon have the answer.

For years the electrical contractor-dealer industry has tried to show the central stations, and the jobbers and the manufacturers who encouraged the power companies, that sales activities conducted without regard for profit or for the loss that would result to others were unfair, and in the long run would defeat the very purpose of the utilities. There were times, of course, when the contractor-dealers would grow militant and threaten legal action but at almost every turn cooler heads persuaded them to continue to try education and not to use force.

The Mailed Fist

The non-electrical retailers have followed the progress (or lack of progress) of such efforts and apparently have come to the conclusion that this is no place for the velvet glove but that a mailed fist is necessary.

In two states bills have been presented to the legislatures for the purpose of prohibiting power companies from engaging in the merchandising of electrical appliances. In one state, and probably by this time more, the Public Utilities Commission is being asked to consider power company merchandising activities with a view to preventing the losses from such activities being covered by the rates. In one eastern city the courts are being asked to restrain the electric light company from continuing its practice of selling lamps at reduced prices.

And this is only the beginning!

It would be surprising, of course, if anything very definite or tangible should come of these efforts immediately. Nevertheless, the handwriting is on the wall.

Installment Sales

The commercial activities of power companies which arouse the ire of electrical and non-electrical retailers are many, the worst of which probably is that relating to installment selling. It is a recognized fact among installment houses that at least 25 percent and preferably 33⅓ percent should constitute a down payment and that payments should not run longer than twelve months. Moreover, customers buying on terms through regular retail channels must pay the financing cost.

The practice of utility sales departments is to charge some nominal down payment, frequently barely more than 1 percent, and, if the appliance costs $50 or more, to allow up to two years to pay for it—and in most cases without any charge for financing.

Who can compete against such terms?

The electrical dealers can not, and that constitutes the major reason why a growing number of the better class of contractor-dealers are closing their appliance departments.

The non-electrical stores cannot compete and that is why they have gone to the cheap grade of appliances and lamps—lines that they can sell on price.

It takes capital to conduct a wide-open installment-selling program, and electrical and non-electrical stores can not afford to have their capital in such a frozen condition.

The utilities on the other hand can sell bonds or preferred stock to the public and secure capital in almost unlimited amount.

Why do the utilities continue to engage in such commercial practices? It is freely admitted that the aim is not to make a merchandising profit but rather to build the load.

The power companies are in business to sell kilowatt-hours. To increase sales the load must increase—but is there not some relation between effort and results?

Connected Load

The connected load increase of all of the washing machines sold in the United States in 1926 was but 200,00 hp. or 150,000 kw., and of all the vacuum cleaners but 66,000 hp. or 50,000 kw.—yet these appliances have been major items in utility campaigning.

The merchandising departments, while probably founded for the purpose of building load, soon find their attention riveted on the dollars and cents sales volume. Where commissions are paid is it unnatural to find that load building is lost sight of?

But is even the small load contributed by the utility's merchandising efforts all additional load that it could not get in any other way?

It is certain that the ruthless methods pursued by many utilities have forced many good contractor-dealers to close down their appliance departments and have curtailed the sales of other outlets.

It has been stated frequently that surveys have showed that where the utility was actively merchandising the public was being better served and the other dealers were enjoying better sales. That is true with the great big BUT, namely but not where the utility is selling at less than list, on unreasonable terms or not charging for financing.

In a measure, of course, the appliance manufacturers have been to blame for they have left no stone unturned to sell the utility commercial departments on energetic merchandising. Of course this was a great temptation to these manufacturers for the utility business represented large volume, few customers and prime credit. Nevertheless, as business men they should not have been so shortsighted. The conduct of the utilities was probably the dominating reason why the dealers never received a profitable margin.

May Be Too Late

Sooner or later the utilities and the manufacturers will see the light, but unless this comes quickly it may be too late to save the contractor-dealer. Sometimes it looks as though the utilities and the manufacturers didn't care whether the electrical contractor flourished or failed in the merchandising business.

This much is certain: The non-electrical store will not go out of the electrical business. This class of store will meet the competition of the power company on trade marked and nationally advertised lines with cut prices. The very advertising of the utilities will make these cuts more obvious and the loss will be charged up to advertising. This practice of using well known brands as leaders is not new.

Then, in order to make a profit in the electrical department, sub-standard nondescript merchandise will be offered at what appears to be low prices. This also is not new.

Is this the kind of appliance the power companies want on their lines? Is the performance of this kind of device going to help build the market for energy?

And then again, what happens when an appliance that was purchased at a non-electrical store goes wrong? Does the store have it fixed within 24 hours, the same as an electrical store would do; or does the customer have to get along without the device for a month or more while the manufacturer can make the repair? Does the time the device is out of service mean nothing to the power company?

The electric light and power companies must decide upon their future merchandising activities. They can be a constructive force to help build the appliance market so that all may enjoy it, or they can continue with their present competition-destroying practices and take their chances.

Will the central stations see the handwriting on the wall?

Public Safety Demands Elimination of Sub-Standard Devices*

By J. C. CAINE
Deputy Electrical Inspector, Portland, Ore.

AN unusual number of electrical fires are caused from the use of sub-standard and non-approved electrical materials. That was the case in Portland before our Stock Inspection Ordinance became effective in 1923, and this statement stands on its own merit, for during the past four years our electrical fires have decreased from over one hundred in 1922, to about eight in 1926. That is, practically, the official record of Portland, Oregon, a city of about 350,000 population.

It would be unnecessary for you and me to discuss this subject today if the public press would really tell the truth, and state when an electrical fire was caused from the use of sub-standard electrical materials. Your constituents would very quickly inform you as the guardians of their safety, insofar as the use of electricity is concerned, that the sale of electrical materials of unknown value must stop.

Carelessness

There is a growing tendency, however, with certain electrical manufacturers, to take a chance to tempt Fate. Too often carelessness and negligence, coupled with unscrupulousness, occur in the construction of electrical materials and appliances. The importance of careful and constant inspection cannot be too strongly emphasized. It is just as essential as a good electrical code. Both materials and the assembly thereof should be carefully inspected.

Attempts are made frequently, and some successfully, to break down standard electrical requirements, to let down the bar and relinquish vigilance. Camouflaged synthetic electrical materials, and theoretical modes of construction are offered as substitutes for tried, tested, durable electrical products of well designed types of structure and reliability.

In the present day electrical appliances are neither a luxury nor a rarity, but are commonplace, and are found in every home and sold in most every kind of store, by men without experience or knowledge of the electrical business. It is because of this situation that it is possible for manufacturers of non-approved appliances to get a foothold in every city.

A Necessary Job

The elimination of sub-standard and non-approved electrical materials and appliances must be accomplished.

Who will undertake the job?

It is an essential public duty. It should be met the same as any other public emergency. It has to do with the public duty of safeguarding life and property against the invasion of destructive forces.

My solution to that problem would be:

It is the duty of the National Board of Fire Underwriters to immediately establish a department to handle this particular work. It is its obligation to the American people and to itself, to make the approval of the Underwriters' Laboratories mean something to the consumer.

*Abstracted from an address before Northwest Association of Electrical Inspectors.

N. E. C. 1927 Changes to Have Field Trial Before Final Adoption

Tentative Action Only on Recommended Changes Which Include Motor Wiring Tables—Special Committee on Interpretations Is Set Up and Has Program to Become Effective Immediately

THERE will be no new National Electrical Code in 1927. More than that, those changes in the Code which met with the approval of the Electrical Committee at its meeting in New York during February were adopted in tentative form only and will be available merely for field trial until the 1928 meeting of the committee, at which time more definite action will be taken.

The reason for this unusual procedure was stated in a resolution which said that it was apparent that the mass of agenda presented for consideration at the meeting was too great to permit of its extended consideration. For this reason it was impossible to compare the recommended changes thoroughly with all parts of the present Code and insure that they did not come into conflict with any existing regulations.

Tentative Adoption

What this means in procedure is, briefly, this: Whenever the recommendation of an article committee met with the approval of the Electrical Committee it was "tentatively adopted," which indicates that it is suggested for trial by the administrative authorities in the field, but does not become mandatory upon them as it would if officially incorporated in the Code. The wording of all these "tentatively adopted" changes will be made public through the minutes of the secretary, which will be ready for distribution by March 15 to all interested organizations. Wherever the wording of a paragraph is changed the entire new paragraph will be given. Individuals who desire information on the details of the changes will be able to obtain it from the organization with which they are most closely connected.

No report of the meeting other than that it occurred is to be made to the annual convention of the National Fire Protection Association, nor will there be any necessity of apprising the American Engineering Standards Committee of what has been done.

This shift in procedure of the Electrical Committee, it was announced, is not intended to become a precedent for future meetings, that matter being left to the judgment of the Electrical Committee each year. It is probable also that those changes which meet with approval after field application and do not conflict with existing rules will be officially incorporated in the Code after the 1928 meeting.

Interpretations Committee

Other high spots of the meeting included the setting up of a special committee on interpretations of the Code, the tentative adoption of the long-awaited motor wiring tables, the report of progress on the problem of diversity factor, recommendations on polarity identification, the decision that when applications are rejected it must be reported, and progress toward the inclusion of National Electrical Safety Code rulings in the National Electrical Code wherever it is shown that they are non-controversial.

The special committee on interpretations is:

(1) The chairman of the Electrical Committee, ex-officio, who shall be the chairman of the interpretations committee.

(2) The electrical field secretary, ex-officio, who shall be the secretary of the interpretations committee.

(3) The chairman of that article committee which has charge of that paragraph or section of the Code for which an interpretation is requested, and

(4) At least two other members or alternates of the regular Electrical Committee personnel.

In other words, the entire personnel to constitute a panel from which the chairman may draw, depending upon availability, experience, knowledge and interest. (Provided, however, that no member or alternate shall be eligible who is actually concerned with a controversial situation to which the specific question of interpretation applies.)

Those desiring an interpretation shall supply the chairman with five identical copies of a statement in which shall appear specific reference to a single problem, paragraph, or section. Such a statement shall be on the business stationery of the enquirer and shall be duly signed.

It is expected that when queries involve actual situations they will so state and that all parties concerned will be named.

Two general forms of findings will be recognized:

(A) Those making an interpretation of the literal text;

(B) Those making an interpretation of the intent of the Electrical Committee when a particular rule was adopted.

Findings

The findings of the Interpretations Committee will be in its name and for the Electrical Committee as a whole.

The party seeking the inquiry will be informed of the finding promptly, following its having been determined.

From time to time these findings, serially numbered, but not otherwise identified, will be bulletined to the Electrical Committee mailing list, including the Technical Press.

The Interpretations Committee personnel serves as volunteers, and will endeavor to follow businesslike methods for expediting the disposing of its docket. It cannot be responsible for it coming to pass that authorities enforcing the National Electrical Code or other electrical wiring regulations decline to acquiesce in or otherwise recognize the findings.

Each Article Committee will be expected to give appropriate consideration to the text of any section or para-

graph which has produced an interpretation finding, to the end that suitable revision of the text may be brought about if called for.

The important actions taken by the Electrical Committee are given below, article by article.

Article Changes

Article 4: Services. A substantial revision of sections covering the subject of supplemental bonding was discussed and tentatively adopted. It was considered problematical whether locknuts and bushing should be depended on for grounding 150 volts to ground and it was decided not to commit the body to the principle of bonding around.

Article 5: Wiring Methods. The entire report of the Article 5 committee was accepted only as a progress report, with the exception of paragraph 511, which was tentatively adopted about as presented. This was with the exception of subparagraph 551h, for which was substituted subparagraph 807e of the present code. This will require polarity identification in braids up to No. 6 instead of to No. 8 as now. This is considered really the keystone for polarity identification. The remainder of the report was referred back to the Article Committee for presentation in 1928.

Article 6: Conductors. This report was tentatively adopted, consisting mainly of editorial changes.

Article 7: Outlet Boxes and Cabinets. The changes proposed in the report were mainly editorial, with the exception of the provision that outlet boxes for concealed work should have a depth of 1½ inches. This proposal was rejected and the remainder of the report tentatively adopted. An unusual situation came up in the tentative adoption of this report since it approved wooden cabinets, although Article 8 says that all cabinets should be of metal. There are, however, a very few places where wooden cabinets may be used.

Article 8: Automatic Protection of Circuits, Etc. This report presented the motor wiring tables which have so often been asked for and was tentatively adopted with the exception of the paragraph calling for circuit breakers on circuits of over 600 amp. instead of cartridge fuses. This was rejected since the present code does not recognize cartridge fuses of over 600 amp. anyway. The motor wiring tables will be published in the next issue of THE ELECTRAGIST.

Article 9: Grounding. This report was adopted in part as presented and embodies a radical change in the grounding of the neutral wire as a means of grounding fixed equipment. In regard to the grounding of portable equipment the committee decided to dispose first of the question of grounding such equipment in industrial plants before taking up the same problem in residences which is considered of less importance than the latter. That part of the report dealing with grounding of portable equipment in industrial premises was referred back as a progress report. Throughout there was the inclination to ground fixed equipment in industrial premises where it exceeded 150 volts to ground.

Grounding

Article 10: Rotating Machinery and Its Control Apparatus. The changes recommended in this report were mainly editorial and the report was tentatively adopted with minor amendments. However, paragraph 1003g was thrown into a progress report.

Article 11: Transformers Under 600 Volts. This report, embodying editorial changes, was referred back as a progress report.

Article 12: Switches. This report, embodying editorial changes, was referred back as a progress report.

Article 13: Switches and Panelboards. This report, embodying editorial changes, was tentatively adopted with minor editorial changes.

Article 14: Fixtures. This report, embodying mainly editorial changes, was tentatively adopted.

Article 15: Lamps. This report, embodying mainly editorial changes, was tentatively adopted. Incidentally there were dropped from the Code at this meeting the rules dealing with series are lights which were first adopted in 1882 by the New York Board of Fire Underwriters.

Article 16: Electrically Heated Appliances. This report was tentatively adopted, with its important changes being the requirement of an approved stand for irons. The section calling for a signaling device on appliances was sent back as a progress report.

Article 30: Cranes and Hoists. This report, embodying recommendations on grounding, was tentatively adopted with editorial changes.

Article 32: Extra Hazardous Locations. This was referred back as a progress report.

Article 33: Garages. This report was referred back as a progress report.

Article 34: Motion Picture Studios. This report was tentatively adopted, embodying mainly editorial changes.

Article 35: Motion Picture Projectors. This report, embodying mainly editorial changes, was tentatively adopted.

Article 36: Organs. This report, embodying mainly editorial changes, was tentatively adopted.

Article 37: Radio Equipment. This report, stiffening up the requirements, was tentatively adopted as presented except that it was decided to call for a fuse in the negative wire and to have the fuses and circuit breakers within 18 inches of the receiving set.

Article 38: Signs and Outline Wiring. This report, which recommended confining weatherproofing to outdoor equipment, was tentatively adopted.

Article 39: Theatres and Motion Picture Houses. This report which was tentatively adopted pointed out that wiring on the stage of theatres had greatly changed, being better in some respects and worse in others than in past years and it was urged that this wiring be inspected most carefully.

Diversity Factor

In regard to the report on the diversity factor for lighting loads which came before the meeting it was pointed out that this was at present merely a progress report and should be so considered. A real report on the subject was promised for the next meeting.

English Co-operation

In Leicester, Eng., the central station and the contractors have established a cooperative showroom, in which each contractor is a shareholder and all appliance business in the town is done through that shop. It is said the arrangement has worked extremely well, with a surplus for dividends promised this year.

Some Problems of Office Building Installation and Their Solution

New Pennsylvania Railroad Building Has Interesting Transformer Room Design and Layout and Gives Example of Good Practice on Metal Pan Concrete Floor Construction

By WALTER CAVANNA,
Electrical Engineer, Electro Construction Co., Philadelphia, Pa.

THE new office building of the Pennsylvania Railroad in Philadelphia, as well as being a notable addition to the commercial structures of the city, embodies a number of electrical features which should be of considerable interest to electrical contractors.

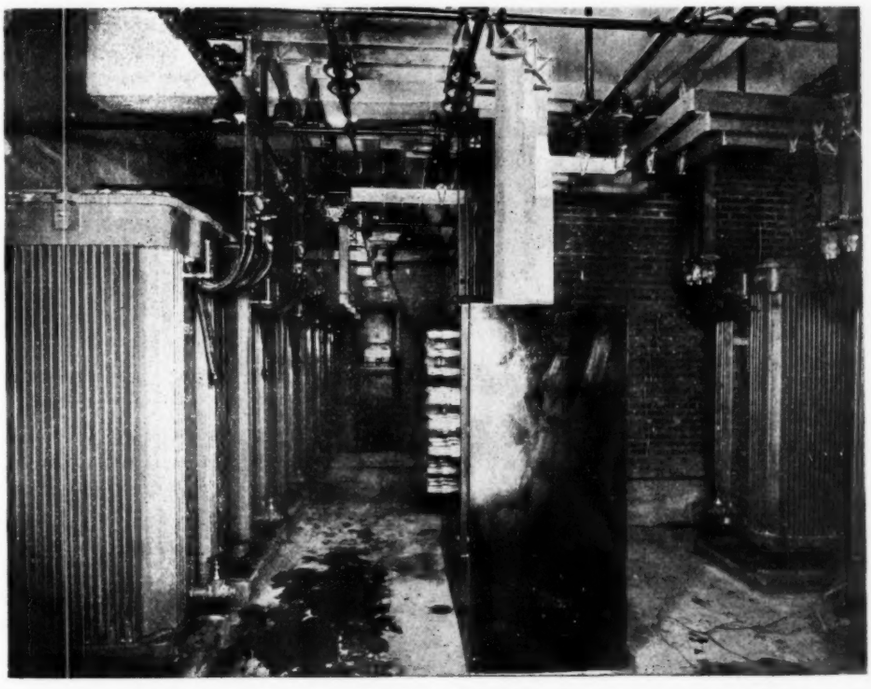
Occupying a site of 250 feet on Market Street and 150 feet on Thirty-second Street, the building has a floor area of 37,500 sq. ft. It is fourteen stories in height.

In the electrical installation of this building a number of engineering and construction problems were encountered, three of the most interesting being the design and layout of the transformer room, the layout and installation of lighting conduits in metal pan-concrete floor construction and the design and layout of underfloor ducts and their installation.

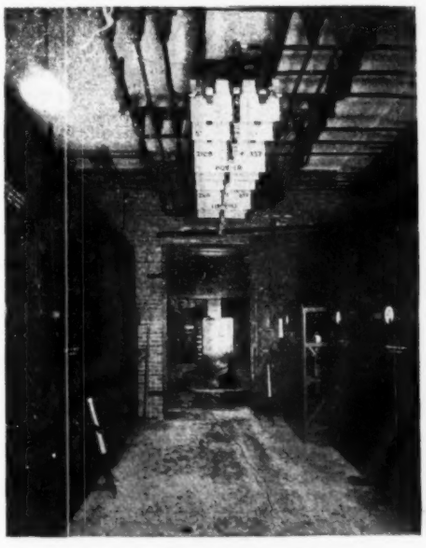
Transformer Room

Located in the southeast corner of the basement the transformer room is bisected by a 12-in. brick wall. Thus it is divided into two separate compartments, one for the six truck oil switches and the high tension switching equipment, the other for the nine transformers and the low tension switching apparatus. The layout of the room is shown in Figure 1.

One of the first problems that demanded solution was that of the physical layout of the equipment, with particular reference to the provision of ample facilities for the removal of the truck type oil switches or transformers in case of breakdown or the necessity for extensive repairs. A large pit was built east of the transformer room and adjacent thereto so that these can be speedily raised from or lowered into the basement from the sidewalk level. This provides an adequate safeguard for the apparatus and insures ease of removal. There were also erected two large metal sliding doors, of 5 ft. wide and 10 ft. high, connecting the pump room with the high tension room and the high tension room with the transformer room. These doors were particularly designed to afford easy access to and removal of the transformers and truck type panels.



A view of the transformer room showing the transformers and the low-tension transfer switchboard



The six truck oil switches

The question of proper ventilation and the removal of superfluous heat from the transformer room next came up for consideration. This problem was solved by placing a fresh air intake adjacent to the transformer pit and connecting with an underground fresh air duct with circular openings in the floor immediately below each transformer. These outlets in the floor open into the main ventilating duct which permits fresh air from the outside to circulate around each transformer case, thereby increasing its radiating sur-

face. In the brick work surrounding the metal stack there are placed louvers, which, opening directly into the transformer room, provide means for the elimination of the heated air, which passes up through the open space between the smokestack and the brickwork.

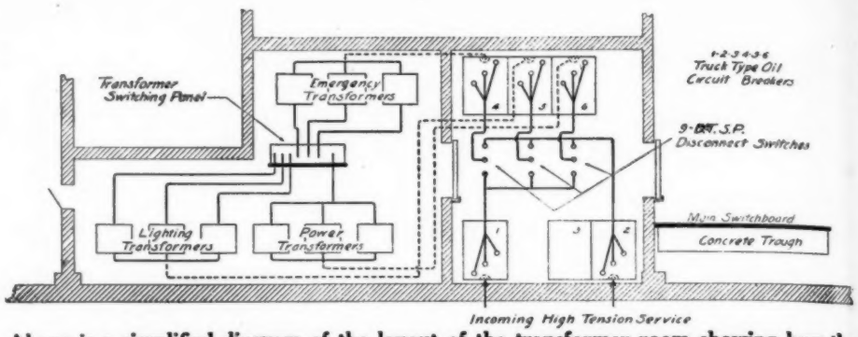
An exhaust fan is furthermore provided in the brickwork adjacent to the louvers to give forced ventilation during hot or humid weather when the natural circulation is insufficient for ordinary purposes.

The transformer room proper is of fireproof construction with brick walls and concrete floor and ceiling. It is equipped with metal doors and has a six-inch concrete curb at the doorway connecting with the high tension room and also a floor drain. In case the room is flooded with water or oil through choking of the floor drain or some other contingency, the six-inch curb acts to prevent overflow into the rest of the building.

There are located in the high tension room six Westinghouse, 600-amp. 15,000-v. three-pole truck-type oil circuit breakers. Two of these truck-type panels, Nos. 1 and 2, are in use as service trucks and control the two incoming high-tension feeders of 13,200 v. 3-phase, 60-cycle capacity. Truck No. 3 is used as a "tie" truck for inter-connecting trucks, Nos. 1 and 2. Three of the truck panels, Nos. 4, 5 and 6, are known as the transfer panels and are joined respectively to the emergency, lighting and power banks of transformers.

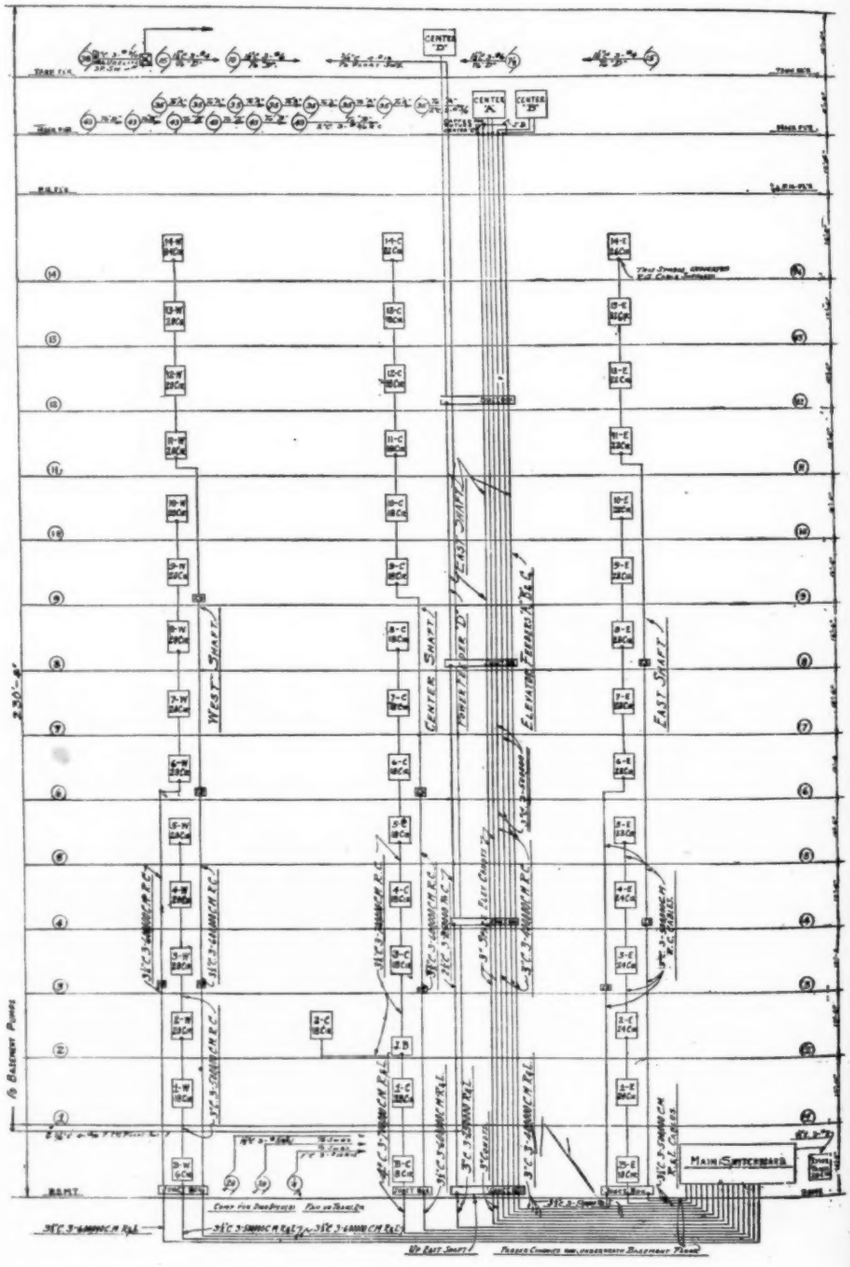
Connected to trucks Nos. 1 and 2 are high tension busses constructed of No. 4/0 solid varnished cambric and flameproof cable mounted on 15,000-v. high tension insulators erected on 1¼-in. pipe framework and supported from the ceiling. Placed between these double sets of cable busses are nine 600-amp. 15,000-v. double-throw disconnecting switches, the main purpose of which is to enable trucks 4, 5 and 6 to be connected to either set of high tension busses depending upon which way the disconnecting switches are thrown.

The principal problem encountered in this room was the necessity to provide against possible shut-down in case of the failure of one or the other of the service feeders. These two feeders are



Above is a simplified diagram of the layout of the transformer room showing how the incoming high-tension service is carried through nine double throw single pole disconnect switches to the lighting, power and emergency transformer banks. The cables from the low tension transfer switchboard to the main switchboard are below the floor but are not shown

Below is the riser diagram showing the size of the main lighting feeders together with the panelboards and the number of circuits of each



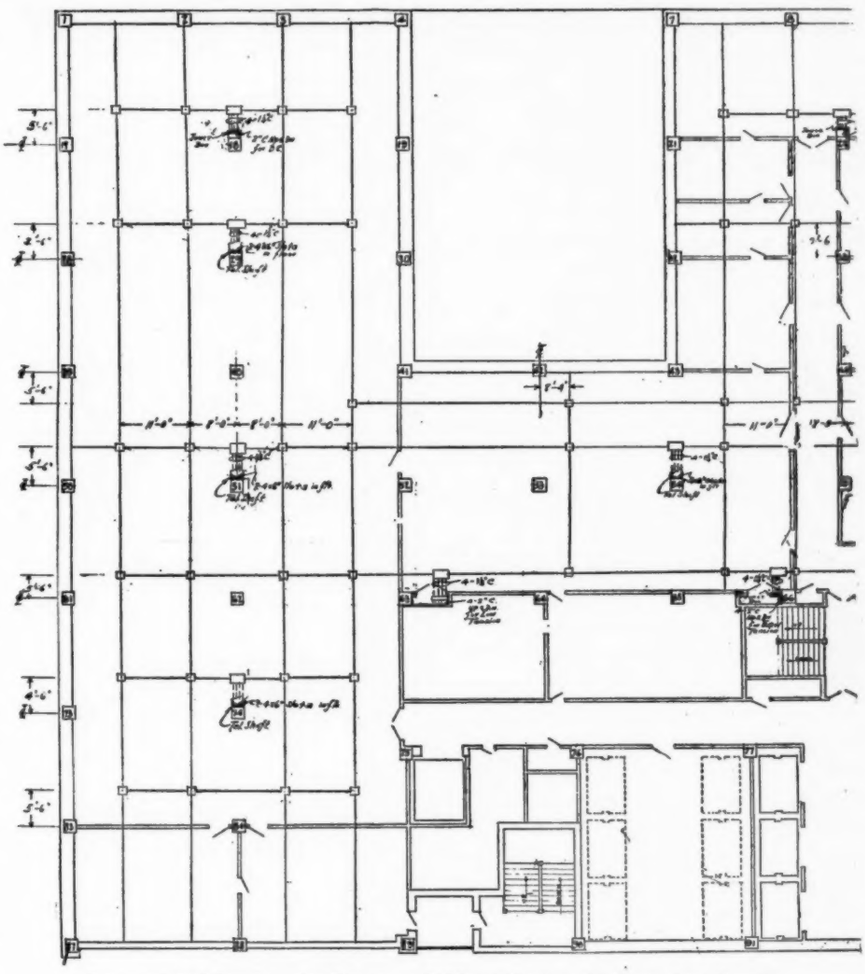
connected to different substations of the Philadelphia Electric Company which provides a double protection against possible shut-down. By the installation of a "tie" truck either service feeder may be connected to either set of high tension busses at will. This feature, together with the double throw disconnecting switches, permits trucks 4, 5 and 6 to be fed from either high tension feeder. The arrangement is a very flexible one, allowing several possible switching combinations.

Extending from trucks 4, 5 and 6 are 3-in. sherardized conduits placed below the finished floor and each containing 3-conductor, No. 2 B. & S. gauge, 1,500-v. varnished cambric and lead covered cable. These cables and conduits are connected to the emergency, light and power banks of transformers respectively and are terminated at either end by the Standard Underground Company's type D. S. pipe top terminals of suitable form, having the body screwed to the conduit end and sealed around cable and sheath with stuffing box joint.

Installed as shown on the drawing in the transformer room compartment are nine 200 kva. 13,200/230-115-v. 60-cycle single-phase type S. K. Westinghouse transformers arranged in banks of three each in order to provide a 115/230-v. 3-wire single-phase lighting service, a 230-v. three-phase power service and a combined light and power emergency service.

The principal difficulty encountered in the transformer connections was to provide against the possibility of complete shut-down when repairs are necessary, or in case of replenishment of oil, or the burning out of transformer coil. As will be readily noted, the fact that the light and power loads were each 600 kva. suggested an emergency bank of transformers of the same capacity and capable of performing the duties of each.

The solution of this problem was found in an arrangement of double-throw switches, as shown in the schematic diagram of the transformer connections on the large scale layout. These switches consist of three 1,000 A. 2 P. D. T., three 1,000 A. 3 P. D. T., and one 1,600 A. 3 P. D. T. and are mounted on a transfer switchboard located at the center of the transformer room.



Symmetrical form is the feature of this typical underfloor duct layout

This board is connected to the transformers by a system of ¼-in.x4-in. and ¼-in.x6-in. copper bus bars erected on low tension bus bar insulators and hung from the ceiling by 1¼-in. pipe framework. This construction permits the ready removal of a transformer in case it must be sent back to the factory for repairs.

Again referring to the diagram one may note that the connections are quite complicated insofar as it is necessary to change from three 3-wire 115/230-v. single-phase circuits in multiple on the lighting service to a three-phase 230-v. delta connection in case of power. As the emergency bank is to take the place of either the light and power banks in case of necessity, the connections have to be so designed that by simply throwing the double-throw switches in the proper direction, the emergency bank can be thrown on either the light or power service as desired.

From the center lugs of the double-throw switches, mounted on the low tension transfer switchboard, are extended through 2½-in. fiber ducts placed below the floor twelve 600,000 c. m. varnished cambric and lead-encased cables connected to the lighting switches and six 1,000,000 c. m. varnished cambric and lead-encased cables connected to the power switches. These cables terminate in a concrete trough below the main low tension switchboard and located adjacent to the high tension room.

Extending from the concrete trough at the main low tension switchboard are a number of rubber-covered, lead-encased cables installed in sherardized conduits, installed below the floor and joined to the three-wire shafts as shown on the riser diagram. These cables are the main light and power feeders and supply current for the entire building.

Another important detail in connection with the transformer installation was the erection of the ¼-in.x1-in. ground bus. This bus is placed around the entire perimeter of the transformer

room and the high tension room and all apparatus such as transformers or truck switches, etc., are grounded thereto. It is in turn connected to the service side of the water meter by one No. 2/0 B. & S. cable placed in 1-in. conduit below the basement floor.

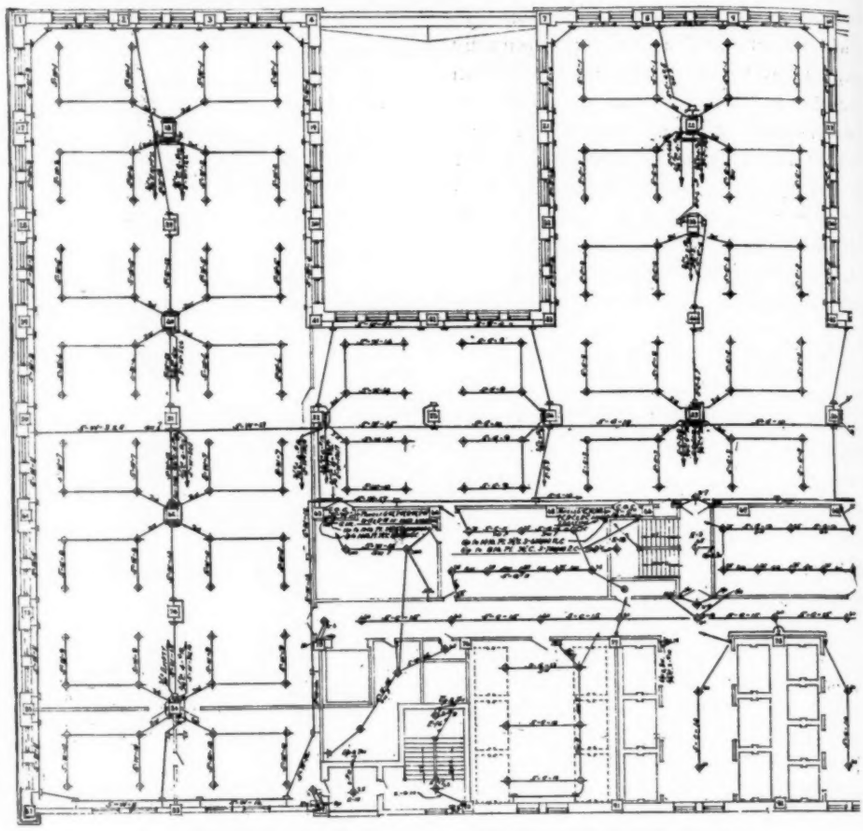
Lighting Conduits in Metal Pan-concrete Floor Constructions

Starting at the main low tension switchboard, the main lighting feeders are carried without reduction in size in rubber-covered, lead-encased cables, through sherardized conduits placed below the basement floor. These conduits terminate at the bottom of three wire shafts in large junction boxes. These wire shafts are known as the east, center and west shafts, respectively, from their location in the building and are ideally situated in order to give the proper location for the centers of distribution.

The riser diagram shows the sizes of these main lighting feeders together with the panelboards and the number of circuits of each. Beginning at the main junction boxes at the base of the wire shafts the lighting cables are changed to rubber-covered, are installed in sherardized conduits and continue up these conduits, passing through the various panelboards as indicated. The sizes of these feeders were computed by taking into account the connected load, demand factor and the drop in voltage due to line loss.

Referring to the typical floor layout of the lighting conduits the first thing that strikes the attention is the symmetrical layout. Three panels are located on each floor and placed in the east, center and west shafts. These panels in turn control the branch circuits in their respective adjacent areas of the building.

The branch circuit work has also a symmetrical arrangement as it is in general groups around the various columns of the building. There are located on these columns as indicated two-gang toggle switches controlling the lighting outlets in pairs in the work space proper. These pairs are so situated that they are generally parallel to the windows, so that artificial illumination may be had by simply operating the nearest switch on the column, thereby avoiding going back to the panelboard. This feature saves on current consumption and also allows the occupant to get light when and where he wants it.



In the branch wiring layout each panel received a code number

The plug receptacle outlets shown on the exterior walls and partitions of the work space are mounted 6 ft. above the floor and on different circuits and the outlets themselves are connected by a continuous loop of ¾-in. conduit, so that repairs or extensions can be easily made.

At certain locations ¾-in. empty conduits connecting with the panelboards are installed to take care of future changes and extensions.

The lighting and receptacle circuits are laid out on the basis of about 1,200 to 1,500 watts per circuit with not more than eight or twelve outlets per circuit. All of the sherardized conduits used in the branch circuit work are at least ¾-in. pipe size, while the branch wire is No. 12 B. & S. guage rubber insulated, the compound containing not less than 30 percent of pure rubber gum.

In the layout of the branch wiring a simple code system was adopted. The panels each received a number, for example: 5-E, 5-C and 5-W designating the fifth floor panels east, center and west, respectively. The circuits emanating therefrom were likewise designated as 5-E-6, 5-C-7 or 5-W-10, indicating from what panel they were fed and also the circuit number.

The remainder of the floor wiring did not present any special problem, as this space is called the service belt and is used for toilets, locker rooms and elevators, etc. The lighting in these rooms follows standard practice and all switches are located to insure convenience in operation and for economy in current consumption.

The installation of the conduits in the floor slab presented many difficult problems which were successfully worked out. Owing to the special design of the floor structure it was impossible to run in the slab any conduits larger than ¾-in. and then only with due regard to the interference of the reinforcing rods. The floor structure in general consists of a combined concrete slab and joist construction, the slab being about 3 in. in thickness while the concrete joists are 5 in. in width and about 8 in. in depth and placed on 25-in. centers. This form gives what is known as the "T" shaped beam construction, which is light but very strong.

The building has a structural steel

skeleton and the floors have the customary steel beam and girder construction. These steel beams and girders are fireproof and support the concrete floor above described. From this brief resumé of the floor construction it can be seen that it was exceedingly difficult to properly install the lighting conduits in such a slab, especially when the under floor ducts had also to be placed in the same slab.

Metal Pan

To make the problem more difficult the concrete floor was poured, using the modern metal pan for the form work instead of the commoner wooden forms. These metal pans were shaped like inverted "U"s and were arranged to be removable so that they could be used over again in the construction of other floors.

After the metal pans were put in place the outlet boxes were located as shown on the plans. These outlets occurred sometimes in the slab proper and sometimes in the concrete joists. If they occurred in the slab a wooden saddle was placed on a level with and between the joists, and the outlet box placed on that; on the other hand if the outlet was placed in the concrete joist this provided ample means for resting the outlet box on the form and connecting the conduit to it.

After the conduit work was installed the reinforcing rods were laid around and underneath and then the underfloor ducts were placed flush with the finished floor surfaces.

In general the finished ceiling is plaster on wire lath about 2 in. below the concrete joists and the outlets are extended and made approximately flush with the surface.

The lighting conduits are run as far as possible in the concrete joists on account of the greater depth and the capability of turning ells more easily.

Underfloor Ducts

After the experience with one floor the wiremen became familiar with this type of construction and inasmuch as there were many such typical floors the conduit was cut and threaded ready for installation in advance of the actual laying. This meant a considerable saving in labor. After the best method of running the conduit was selected this was used throughout the installation of the other typical floors.

The design of the modern office building is not complete unless provision is made in advance for the installation of individual telephones, desk lights and buzzer system at the desks of the various occupants. Before the tenants actually move into the building and occupy their offices it is virtually impossible to determine in advance the actual location of the above mentioned services.

The statement above being true it was decided to design and lay out a system of steel underfloor ducts to meet this contingency.

Referring to the layout of the underfloor system as shown on the accompanying drawing it will be noted that the steel underfloor ducts consist of one ¼-in.x¼-in. high tension duct electrically welded to one ¼-in.x3-in. low tension duct. This system was designed after taking into due consideration the tentative furniture layout, the probable re-arrangement of desks, chair and files, etc., together with other factors involved.

Continuous Runs

The underfloor duct was installed in continuous runs terminated at walls or partitions and having specially designed floor boxes installed at the various junctions as indicated, so that the ducts could be properly "fished" for the installation of all future wire and cable.

The system installed was that manufactured by Walker Brothers, Philadelphia, and was ordered in 10-ft. lengths. These 10-ft. sections were fastened together with specially designed cast iron saddles formed in the shape of a U and made so that the two ends of the duct butted together and fastened by set screws before pouring the concrete.

At the location of columns Nos. 18, 22 and 26 were placed steel cabinets with hinged covers, connected with floor junction boxes by four 1¼-in. conduits as shown. Starting in the basement at the meter generator switchboard and running up through the building alongside of these columns were 2-in. conduits each containing three No. 3/0 rubber-covered wires and connecting with the fuse panels installed in the various cabinets on the several floors.

These panels supply direct current and connect with the previously mentioned floor pull boxes. They connect also with the branch circuit wiring contained in the 1¼-in.x1¼-in. high tension ducts. These ducts furnish 110 v. direct current to the large number of adding machines, comptometers, etc., which are at present equipped with fractional horsepower direct current motors and have seen service in some of the older office buildings.

Motor Generator Sets

The current for this service is furnished by duplicate 115-230-v. 3-wire 25 kw. motor generator sets. These motor generator sets are installed on concrete foundations in the basement and equipped with a switchboard for controlling the same and also for feeding the mains described previously.

The low tension duct of ¼-in.x3-in. size is designed primarily to accommodate the telephone and low tension buzzer systems.

At columns Nos. 29, 51, 54, 56, 57, 59, 74 and 81 are located the telephone shafts. The shafts are connected by four ¼-in. conduits with floor junction boxes, which in turn are connected with the underfloor duct system. At each shaft are located two 4-in.x6-in. slots in the floor for the passage of the bare lead covered cable risers. These telephone risers run from the basement ceiling, where they are interconnected, up to the fourteenth floor. In each shaft are placed the interconnection boxes and terminal strips of the telephone company and ample space is provided for the necessary taps and splices in the above mentioned telephone cable risers. Interconnection is made at the separate shaft on each floor with the individual twisted pair telephone wires from each phone.

In the shafts adjacent to columns Nos. 63, 66 and 69 are located suitable junction boxes with hinged covers and each is connected by four 2-in. conduit risers. From these junction boxes are run four 1¼-in. conduits connecting with floor junction boxes, which are part of the underfloor system. The shafts provide for the interconnection of the low tension systems such as call bells, buzzers, automatic telephone system, etc.

After this brief description of the underfloor system, the problems of installation can be discussed. The duct was placed flush with the finished cement

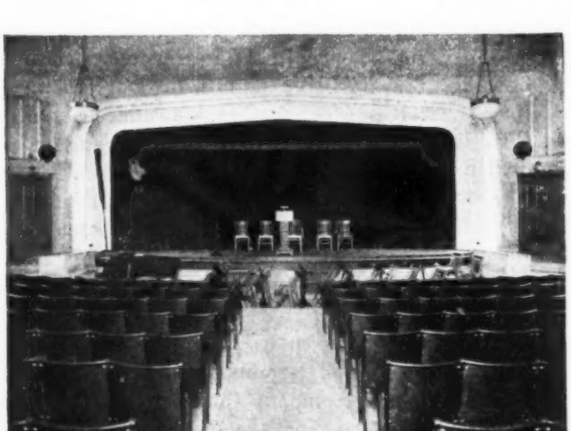
(Continued on Page 38)

School Public Address Systems
A Chance for Contractors

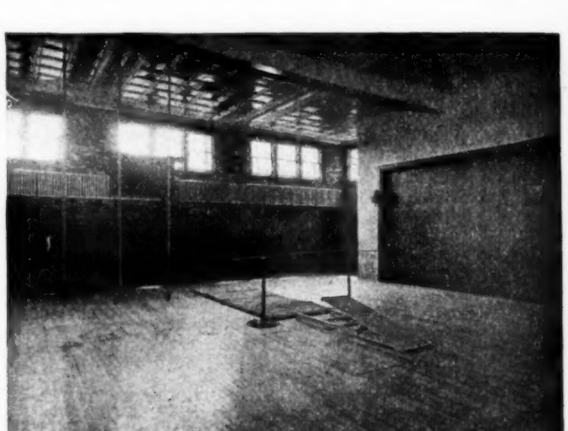
The Literature Room at the Mount Vernon High School Has Two Loud Speakers Over the Door for Distribution of Educational Programs

MANY schools recently have come to the electrical contractor for help in perfecting quick communication facilities which are as essential to the modern school as to the commercial institution. The contractors have answered by installing the public address system, pictures of which are shown here. By means of this the following features are made possible: voice extension of the principal to any group or to all classrooms simultaneously; voice reinforcement for speakers in the auditorium; auxiliary fire alarm purposes; amplification and distribution of music for marching and rhythmic dancing; distribution of educational radio programs. Cost of the system runs from $2,000 to $5,000. Photographs shown here are by courtesy of the Western Electric Company.

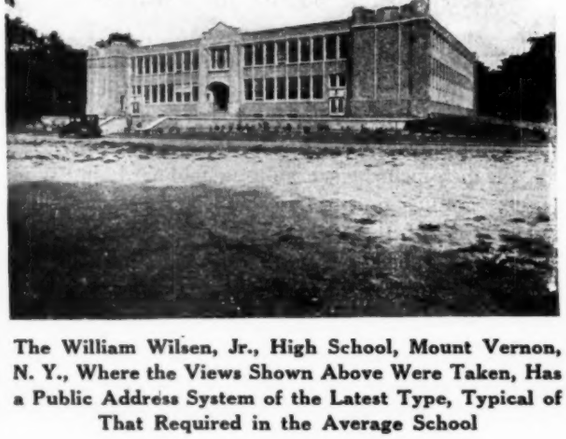
In Each Classroom Is a Loud Speaker Over the Blackboard, Cutting Down the Time Usually Lost in Moving the Class to Assemblies, Etc.



The Loud Speakers at Each Side of the Stage in the Auditorium at the Left Serve to Amplify the Speakers' Voices, While That Shown in the Gymnasium on the Right Transmits Music for Drills and Exercises.

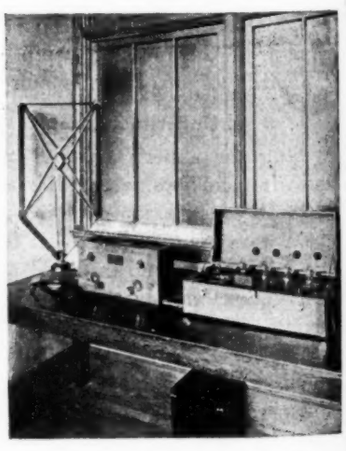


Below Is the Principal Making an Announcement from His Desk to All Classrooms Simultaneously



The William Wilsen, Jr., High School, Mount Vernon, N. Y., Where the Views Shown Above Were Taken, Has a Public Address System of the Latest Type, Typical of That Required in the Average School

This Part of the Set Receives and Distributes to Various Rooms Programs from Broadcasting Stations



The Important Details of a

Sound Financial Administration

Keeping Funds Busy
Discounting Bills
Obtaining Bank Loans
Maintaining Good Credit
Checking Invoices

By M. S. MacNAUGHT,
Vice President, Barnes-Pope Company, Boston

This is Mr. MacNaught's second article on the subject of financial organization and in it he tells how important it is to keep every invested dollar earning at its capacity rate week after week. Better than that, however, he points out a number of ways in which it may be done, such as temporarily investing surplus funds in good securities, doing business on the bank's money and several other short cuts to increased profits. If there are a good many small leaks in a business, it does not take long for the profits made on work done to drain away and this article is important in showing how to stop up some of these leaks.

SOUND financial administration is a virtue which will pay substantial cash rewards, for while no man can make money from construction work acquired on an unprofitable basis, a capable treasurer will at least use methods which assure the conservation of every possible dollar as profit.

At the very start, we must realize that a contractor's capital would earn 4 percent interest in a savings bank, or 6 percent in a fairly safe security, and that he risks it in a highly competitive field solely because he expects to secure a far greater yield. Generally speaking, contractors place themselves upon an extremely moderate salary basis which is usually not a bit higher than they would normally receive in the employ of another company. Therefore, they are only justified in continuing an independent business organization so long as dividends on their investment considerably exceed the current average return from banks or good securities.

In relentless pursuit of profits the contractor hires a superintendent whose express duty it is to exact from every employee a full day's work for his daily wage; yet how many are equally intent upon forcing every invested dollar to earn at its capacity rate week after week! It may well be suggested that the owner who holds a stop-watch over his dollars as well as his men is the one who will reap the greatest possible financial harvest from his operations.

A really adequate labor from every invested dollar presupposes maximum volume with relation to capital throughout the year, and since such a Utopian condition cannot be even approximately reached, a treasurer should do the next best thing and keep otherwise idle funds temporarily employed in foreign fields when the building pace slackens.

Before proceeding further it might be worth while to inquire just what net profit is theoretically possible and how closely capable managers approach to such an ideal.

Margin of Profit

The actual margin of profit to be expected varies with the concern, being largely dependent upon the magnitude of overhead expense, the quality of work obtained, and its excellence of supervision. No sane business man wants to take a contract unless it covers actual costs plus actual overhead plus a clear profit of about 10 percent on the gross value.

If we assume for example a well-planned company, doing a conservative business of $100,000 annually on a capital of $15,000, a consistent 10 percent profit policy would net $10,000 a year. Overhead expense is of course adequately covered, and includes a salary for the proprietor commensurate with the volume. On this basis, a well-managed company would be in a position to declare a 66 percent dividend each year from profits from construction alone.

That is an excellent ideal to shoot at, despite the fact that it is not generally attainable because:

1. Every dollar of capital is not constantly employed.
2. Contractors have not yet learned to do only profitable work.
3. Too much potential profit is lost by haphazard financial management.

A 50 Percent Dividend

Nevertheless, if proper precautions are taken, the contractor of our example may within reason expect sufficient net profit to declare a 50 percent dividend if deserved attention is given to:

1. Securing uniformly profitable work in required volume.
2. Proper administration of overhead.
3. Proper administration of finances, with which this article deals.

The very first problem that a treasurer should solve is how best to manipulate his funds so that only a necessary minimum will at all times remain in the bank to provide for payroll and similar expenses. So far as possible capital should be employed in actual construction projects, for as demonstrated above, it is there that it will earn the greatest amount.

However, there are frequently periods when a sizable portion of the

company funds are unused. For instance, during the winter or during a depression perhaps half the total capital is idle, and consequently losing money for its owners. In order to partially avoid this the surplus over current operating requirements may wisely be withdrawn from the checking account and carefully invested in a sound security.

For instance, short term notes nearing maturity can be purchased to yield well in excess of 5 percent, a rate far superior to national bank or trust company interest at 1 percent or 2 percent. A company with $5,000 on its hands February 1 can buy at par a well secured note maturing May 1, and obtain a yield of about 5 percent.

For three months this would give a net return of $62.50, a small sum to be sure, but nevertheless well worth an hour of the treasurer's time to procure, and certainly better than nothing at all.

Short Term Investments

While at present there is some difficulty in obtaining better than moderate yields from securities backed by records of sterling worth, still a little patience will unearth some very excellent utility and manufacturing notes netting over 5 percent. Furthermore, if these are purchased from the house which underwrote the original loan there is a very good possibility that the notes can be bought without the addition of any brokerage charge.

The treasurer who is interested in constantly employing his funds in a productive manner will do well to keep in touch with the current suggestions of reliable stock exchange brokers, so that when an investment is to be made he will be in a position to readily locate a suitable security.

Needless to say, the short term investment of corporate funds should not be entrusted to either common or preferred stocks. Not only do taxes and brokerage charges reduce any gross profits, but also the possibility of a substantial loss if a forced sale is made constitutes a risk no responsible treasurer will assume. A sound short term note nearing maturity is invariably stable in price, hence if an emergency sale is necessary chances are good that no loss need be taken.

Another use for otherwise idle funds, that of taking discounts, is so intimately associated with loans from banks for the same purpose that they will be considered together.

Bank Loans

The contractor who operates upon a sound business basis will find his commercial bank in a position to give him a loan equal to 20 percent to 40 percent of his total capacity, at usually about 6 percent interest, upon presentation of a satisfactory financial statement. The composition of the financial statement, and its bearing upon loans for construction purposes is so important that it will be treated in a separate article. For the present, use of bank funds to take discounts will be considered as a special case.

A note may be payable in from one to six months, depending upon prevailing general financial conditions, the policies of the bank, and the prestige of the contractor. Usually such a note may be extended at maturity for a further period of months, if the contractor so desires, and if his financial condition continues to warrant such consideration from the bank.

But why borrow? Why go into debt? Consider for a moment the savings to be made by taking cash discounts on bills from manufacturers and jobbers. These discounts range from 1 percent on wire to as much as 5 percent on many specialties, with an average at about 2 percent. Therefore, if all possible discounts are taken, a return of approximately 24 percent per year is obtained on the money so used.

Suppose material purchases average $2,000 a month. By taking the proffered discounts a saving of $40 a month, or $480 a year could then be secured. Capital for such a volume would be about $10,000. In other words, a return of 4.8 percent on total invested capital would be possible by this judicious use of $2,000.

Taking Discounts

The efficient concern will not as a rule set aside its own money to take discounts because normally it can earn better than 24 percent annually if devoted to good construction work. But often a bank will loan money for discount purposes when it will not make an equal loan for construction. Bank officers may believe that a company is doing the maximum possible volume, and so will not advance cash to further expend, but they nevertheless recognize the fundamental soundness of making cash payments on material purchases, and consider their money well used if borrowed for that purpose.

If the $2,000 noted above is borrowed it will cost $120 at 6 percent yearly. This, deducted from the $480 gross saving, gives a net return of $360, or 3.6 percent on the total invested capital, every cent of which can be earned on money supplied by the bank, and therefore in no way interfering with legitimate use of corporate capital in the more profitable but more hazardous building field. This 3.6 percent net on total capital is so nearly a gift that it is cause for wonder and comment when so few substantial contractors fail to grasp the opportunity.

Suppose now that for several months of the year company funds are not fully required for construction purposes. Instead of investing the balance in short term securities, or letting it lie idle in the bank, the treasurer can take up his outstanding notes and for the time being discount bills with his own company's money.

Releasing His Funds

Later, when business speeds up and he needs all available cash, he can simply get a new bank loan for discount purposes and thereby release his own funds for electrical work. In this way capital is kept working at all times in such a way that it earns a maximum annual profit.

Needless to say, banks do not make loans indiscriminately. They require a clean financial statement, some convincing reference as to the moral responsibility of the customer, and an honorable reputation as a background. Perhaps the most important factor of all has to do with previous satisfactory relations.

Suppose a contractor goes to his banker and secures a loan at a time when his financial statement shows a healthy financial condition. Perhaps he does not really require the money, but he nevertheless borrows $1,000 for a month, and pays back the loan promptly at maturity. It has cost $5. A little while later he repeats the process, then again and still again, taking care each time to pay his debt on the exact date it falls due.

Such a procedure wins him acquaintances at the bank, but it does more than that alone; it accustoms them to placing confidence in his ability to meet their notes at maturity. Once such a reputation is established a contractor can face periods of financial strain with few fears, for even if his statement shows too much money tied up in receivables, the banker is quite sure to overlook the defect, solely because he has confidence that the contractor will meet any note on schedule time. Isn't it worth a few dollars in interest to establish such a reputation as a bulwark against the inevitable day when credit may become a priceless asset?

In a Crisis

As a warning, consider for a moment the plight of the contractor who waits until he is financially embarrassed before he asks for a loan. In all likelihood his banker will scrutinize his statement, spot its numerous weak points, give him an artistic criticism of its frozen paper assets and absolutely refuse him even a dollar. Almost unknown at the bank, and with no record of previous good behavior, it is only to be expected that a plea for funds will be refused. The banker who has had no relations to justify confidence in a petitioning borrower cannot logically take a long chance when the financial statement indicates dire stringency.

Of all a bank's features that which should most interest contractors is its availability as a reservoir from which loans may be drawn. There are other uses for a bank, however, which deserve some attention.

As a place for the storage of valuable papers it is unexcelled. A safe deposit box of the smallest size costs only five or ten dollars a year and will accommodate all the vital papers a contractor usually cares to place there.

Safe Deposit Vaults

It is advisable to assure the safety from fire and theft of signed contracts, leases, notes and similar papers by keeping them in a more solid and better protected container than the average office safe. The loss of such documents may cause extreme embarrassment, hence any move to protect them within the substantial vaults of a modern bank is a sound business step thoroughly justifying the slight expense.

The previous article briefly suggested that depositors should avail themselves of the advice of bank officials. Regardless of the size of the community, its financial brains are most amazingly centered in the local financial institutions. These higher bank executives develop remarkable business and financial judgment in the course of their operations, and acquire a very broad knowledge covering the general requirements of most common branches of industry. This little group of men invariably have at their command the very latest information touching upon local, state and national business trends.

The contractor, and particularly the one who has no other facilities for keeping in touch with financial conditions, will do well to consult frequently and frankly with a bank treasurer or other responsible officer. Such a man has his hand on the pulse of business and can give a contractor timely and valuable predictions as to the probable course of future business. He can offer friendly advice, and authoritative criticisms of the financial statement with suggestions for the remedy of unsound situations. In a great many ways these executives can be a tremendous aid in safely guiding a business, and consequently every opportunity to consult them should be grasped.

Too Long Credits

Returning now to the subject of cash discounts, it is worthy of note that such a policy not only pays very well in dollars, but also it creates a highly favorable impression of financial strength, improves credit rating, and permits the contractor to assume a position of complete independence.

Unfortunately, many contractors are quite lax in their punctual meeting of bills, many of them taking 60 to 90 days or more credit. So far, jobbers and manufacturers have been anxious to retain all possible business with the result that no great amount of trouble has developed, but with prospects of still keener competition for a diminishing volume of trade during the next few years some wholesalers are likely to find themselves pressed for money.

When this condition develops, or when a jobber becomes bankrupt, outstanding accounts must be collected regardless of personal friendship and desire for volume, and some unwary contractors will inevitably be carried under by the storm.

So long as the contractor has sufficient funds readily available to satisfy such a sudden demand for payment of long overdue bills he is in no danger. On the other hand, if he has been swinging too large a volume of business with relation to capital it has probably been done on jobber credit of about 120 days, and a decisive request for the total of these four months purchases would in all probability result in forced bankruptcy.

Frozen Assets

To be sure, the contractor may be solvent on paper. His accounts receivable may far exceed his payables, but if he cannot collect ready cash on such paper assets he will be unable to avoid surrender to the jobber's lawyer.

The treasurer who ignores bills for 90 days, thinking all the while that he is brainy to be carrying part of his volume on the jobber's credit, is in reality courting disaster. He is simply putting his neck into a noose which may be tightened at any moment.

The contractor who makes too liberal use of his jobber's credit (which is equivalent to his money) and good nature may be very sure his progress is being closely watched. So long as business is good, credit is good; but let things begin to go wrong, and in some mysterious way the jobber hears the bad news. Then, in self-defense he takes over the business in order to be sure of salvaging the full value of his bills. That, after all, is only good business. And most jobbers are primarily good business men, even if some of their electrical customers are not.

Reciprocation Expected

Of course the jobber who gives long credit also expects the favored contractor to reciprocate with a large portion of his total purchases. That, too, is only good business, and it serves to further indicate how the unwary contractor may find himself so deeply obligated to one main source of supply that he cannot freely make purchases elsewhere, even when it would be to his greater advantage to do so.

The purchasing problem has been considered in a preceding article, while that of an adequate market price will be detailed in a later article.

However, at this time one sizeable leak can be pointed out, and this occurs in the process of billing, sometimes through the fault of the jobber, sometimes through carelessness in the office of the contractor. So far as mistakes in outgoing bills are concerned, these should be checked before mailing, and of course all bills should be made up from a standard and correct sale price book.

As regards faults with the jobbers' invoices it must be remembered that the price clerk in a wholesale office handles a tremendous amount of detail every day, in the course of which he inevitably makes mistakes. Often, too, an order reaches his desk with incomplete information, and rather than spend precious minutes looking up the matter to see just what was shipped, he takes a chance and prices the order for what he guesses is correct. Naturally, in case of doubt, he favors the jobber and assumes that if he has priced too high the customer will complain and a routine adjustment will be made. There is also the possibility that the jobber will ship a more expensive article than that originally ordered, with correspondingly higher invoice price.

Catching a Mistake

Recently a six-circuit house type panel was ordered from a jobber, and was shipped directly to a job where it was installed as a routine operation. The workman who handled it was not aware what the office order had called for, consequently he made no comment upon the fact that this panel was actually of the large commercial type with double fusing. A few days later the bill arrived, and of course the more expensive panel was priced, costing about $30 more than the one ordered.

Investigation disclosed that the jobber's stock man had mistaken the intent of the order, shipped out the larger panel, duly noted its correct catalogue number on the order and in his turn the price clerk entered the corresponding price. Had the contractor's accounting system been weak this bill might easily have slipped by unnoticed with resultant loss of $30.

Many such expensive errors are likely to occur in the course of a year, and the fault lies not so much with the jobber as it does with the contractor who fails to properly identify every article he orders by a correct description and catalogue number. As an added safeguard the contractor should compile a convenient price book covering standard material, and this should be kept up to date with painstaking care. Invoice prices should be checked against the data in this book.

Definite Quotations

And finally, on every special article such as cabinets, heavy cable, telephones, clocks and motors, a definite quotation should be secured from the jobber or manufacturer, this price being checked where possible by reference to catalogues. This quoted price should then be written upon the office copy of the order, and the original requisition. Then, when the distributor's bill comes in, even the most stupid bookkeeper can compare the invoice price with that of the original quotation. If a mistake has been made it is immediately detected and an adjustment requested.

There is of course no way of determining how much money is lost through such mistakes, but our own observations convince us of a startling tendency for every distributor to make careless and frequent errors. With such a simple article as small fuses, on three consecutive orders, the price varied each time. Inquiry showed that there had been no price change and that clerical carelessness accounted for the entire variation.

A dollar error on this order, five on that, and thirty on some other rapidly mount up to a considerable sum at the end of a year. It is a financial drain which can be completely eliminated if a few simple precautions are taken.

Another financial policy of real importance is the billing of completed work immediately upon finishing each job. Every day that billing is delayed means just that much longer before payment can be solicited, and the ultimate effect is to unnecessarily limit the amount of capital available for new work.

Sending Out Bills

All too often bills are not sent out promptly because the bookkeeper has not received jobbers' invoices covering one or two special items, or because he is too occupied with some other branch of his work. However, no single function of the bookkeeper is important enough to warrant delay for even a single day in billing. And if one or two prices are holding up the whole process the jobber should be required to give a correct telephone quotation.

The more quickly money is collected on bills the greater volume of business a contractor can do on a given capital and the more secure and liquid he makes his position.

In conclusion, it must be admitted that every contractor has his own special financial problems which this article has perhaps entirely neglected. However, if every one will endeavor to keep his capital constantly busy upon profitable work, and so proportionate his business that he is constantly solvent, the petty losses from minor troubles will be far outweighed by careful general administration.

Principles of Modern Radio Receiving

By L. Grant Hector, Ph.D. Burton Publishing Co., Buffalo, N. Y.

The author states in his preface that this book is written for two purposes: the one to give to the intelligent but non-technically trained man a unified picture of the science of radio; the other to give some concrete information to designers, builders, or sellers of sets.

Three chapters are entitled "Fundamental Electrical Theory." The theory discussed is naturally that which has application in radio practice. Following these there are one chapter on vacuum tubes, one on radio amplification, two on radio frequency amplification, one on superheterodynes, and one on battery chargers and eliminators.

For the non-technical reader, the treatment of the subject is excellent. The radio dealer may well recommend this book to such of his customers as may wish to know something more about their sets than merely how to turn the dials.

The man with some technical training will find here a simple and clear statement of the fundamental theory involved in the design of receiving sets, and a good explanation of the operation of all the fundamental circuits. Considerable data is included which will be useful to the home constructor.

A valuable feature of the book is the references given at the end of each chapter to books and periodicals where more extended discussions of the subject may be found.

Our National Electrical Code Responsibility

By A. PENN DENTON,
Chairman, A. E. I. Code Committee

IN SUPPLYING the public with service the electrical industry has incurred a responsibility in the National Electrical Code which through the past twenty-five years of industry progress we have not always recognized, but have preferred to delegate to others. Every electrical man knows that in whatever form electrical service is supplied it must be accompanied with the unwritten guarantee of reasonable safety, efficiency and economy. The basic nature of the service through an agency unseen and unknown to the public at large makes the industry's responsibility even greater.

The increasing use of electricity during the past quarter of a century has produced a gradual and natural development of many of the wiring methods provided for in the National Electrical Code. In all of these revisions of the Code the electrical interests have had some part, but they have made no concerted effort to provide for an orderly procedure in arriving at these revisions until within the past two years.

Field Service Committee

We now have through the Electrical Field Service Committee a recognized agency which permits of a constant study of public needs through field contacts with the contractor, the central station and the inspector.

This year, for the first time, we have been able to bring to the various article committees recommendations that represented a fairly accurate cross-section of field opinion.

As long as the dominating influence was the insurance interests we could hardly expect our Code to meet field needs other than provide adequate safety to life and property from the fire hazard. In fact, for many years electrical, as well as insurance men, honestly thought this was as far as responsibility to the public through the Code should go.

The demands of the public today upon electrical service place a much greater responsibility on the makers of the Code. There has come to our industry the added responsibility for electrical installation standards which take into account many factors which an underwriter's Code, by its very nature, was not intended nor expected to provide.

> **"TODAY we, as an industry, have an opportunity never given us before in our Code making—the opportunity to make of the National Electrical Code a Code truly national in scope and effect . . . . We must accept the broad field experience of the administrators of the Code and place in our Code the definite 'where' each wiring method may be used and under 'what' conditions of service. The day has gone forever which permitted us to offer through the Code various wiring methods left to the choice of individuals and communities."**

During the early years of electrical development the wiring in all buildings, office, store, residence presented much the same problem. Our early wiring methods as provided for in the Code took care of these situations very nicely. However, with the increasing changes and complex character of buildings and their occupancies there have developed, constantly, hazards which have seemed most serious to our cities throughout the country; but when these were viewed from a national standpoint by the electrical committee they were not deemed to be of sufficient importance to require specific provisions to meet them in the National Code.

Through the difference of opinion of the Code makers on the one hand and the Code administrators in our larger municipalities on the other there has resulted a multitude of widely varying local Codes, none of which is the one ideal Code by itself, but all of which our electrical industry and the insurance interests are confronted with.

Naturally, these various electrical Codes, all more or less incomplete in themselves, have greatly tended towards inefficiency and uneconomical methods.

Today we, as an industry, have an opportunity never given us before in our Code making—the opportunity to make of the National Electrical Code a Code truly national in scope and effect if only we will seize this opportunity.

Through the wise and judicious operation of our electrical field service we can bridge the gap between the makers and the administrators of this Code. We must accept the broad field experience of these Code administrators and place in our Code the definite "where" each wiring method may be used and under "what" conditions of service. The day has gone forever which permitted us to offer through the Code various wiring methods left without guidance to the choice of individuals and communities.

Each His Place

The responsibility we face as an industry is one in which every electrical man should bear his part. Each group of our industry—the manufacturer, the jobber, the central station, the contractor and the inspector—has his particular place in the responsibility.

What a phenomenal service electricity renders mankind today, but greater and beyond all comprehension will be the service of tomorrow. Let each man and every group do their part toward the making of a National Electrical Code for the future which will assure public satisfaction and call forth commendation on the men of today. Let us not, by failure to accept our industry responsibility, cause failure in electrical service, for as sure as we do there must necessarily result another National Code sponsored by agencies over which we would have no control, and through the provisions of which our industry interests might be seriously penalized. We must not forget that the public interest is dominant in Code making and that, when properly recognized, will serve our best interests.

How the Contractor Can Advertise for Residence and Commercial Work

This Kansas City Contractor Believes in the Value of a Slogan That Can Be Worked Into All Forms of His Advertising

EVERYBODY agrees that it pays to advertise—properly. That last word is what bothers the electrical contractor. Just what is the proper method of advertising for him? Should he depend on direct mail entirely? Should he use some newspaper space? What points should he talk about? How is he going to get sufficiently away from the advertising rut to attract attention and get his money's worth?

These are such constant questions in the minds of moderate-sized contractors that it is worth while to tell of some of the advertising experiences of L. E. Wiard, a Kansas City contractor, who has built up a good business with the help of inexpensive publicity.

A Good Slogan

"Our experience," says Mr. Wiard, "leads me to the conclusion that the first thing to consider is a good slogan. It ought to be short and by all means one that will stick in the mind of the public and identify the contractor. My name fortunately lends itself to the slogan, 'Wired by Wiard,' which is easy to say and hard to forget. But even though a company may be the Smith or the Jones Electric Company it is possible to invent some sort of sentence which will make the public think of that company whenever it thinks of electrical work. Then that sentence can be hammered home in every bit of advertising from direct-mail to job signs.

"Even my mechanics wear uniform work clothes, a khaki-colored unionall, with my slogan worked into the back of the garment with red thread. Anybody who stops to watch them on the job knows that the building is being 'Wired by Wiard.'

"I have never been convinced of the value of newspaper advertising for the contracting business and never use the dailies except on the completion of some noteworthy building project when I take space along with other sub-contractors in a co-operative advertisement. But there is entirely too much waste circulation in the newspaper field for the contractor and I do not know of a single contractor who has used this form of publicity successfully. Of course I am speaking entirely of the metropolitan community. Perhaps in the smaller town newspaper advertising might pay.

"Direct mail has been our best bet, but the success of that is contingent entirely on constant currying of lists and following up in person every prospect who shows any interest. Nothing has yet been invented that beats a good pair of legs in building up a business.

L. E. Wiard

"We watch the building permits as issued and circularize the holders with a form letter at once. We have not been deluged with business as a result of this method, but it pays well enough to keep on with it. We have another regularly prepared list of industrial concerns to which go, periodically, letters on lighting and rewiring. Another list takes in all the garages which at this time are particularly good prospects for rewiring and relighting work, since most of them were built when the automotive industry was in its infancy and much of the original wiring was done when there were few precedents by which the contractor could be guided. Now, in the light of experience, it is possible for the alert contractor to obtain contracts for rewiring these garages in a manner to rectify former mistakes and give 100 percent efficiency in lighting. Another list is of mercantile establishments which have store fronts. Whenever a street is widened it means new store fronts and owners who before were satisfied with obsolete lighting effects will be willing to change to modern installations. So we conduct a strong direct-mail campaign to these merchants first and then follow up by personal solicitation.

"The one publication we advertise in regularly is the bulletin published by the local builders' association. It circulates entirely among those interested in building and is better even than direct mail since there is no waste circulation to amount to anything and the cost is cheaper than the mail method. The copy of our advertisement is seldom changed, as its chief purpose is the one I mentioned above—to hammer home the slogan, 'Wired by Wiard.'

"These types of advertising after all are good only so far—to get us in touch with the prospect. After that comes the sales talk and the most potent persuader I have is another form of publicity—a loose-leaf binder, 7x10 in. in size. This contains photographs of a great many of the buildings we have wired and also contains photostatic reproductions of letters of recommendation from electrical authorities in Kansas City. These are mounted on heavy linen which renders them practically indestructible and the loose-leaf feature of the book enables us to add to the collection from time to time. Since most persons are 'eye-minded,' a visible proof of what we can and have accomplished gives us an advantage over the man who has to use words alone to land the contract."

Court of Appeals Rules on Bidding Error

When a contractor inadvertently omits an important element of expense in bidding on a job and is awarded the contract, he can not be held to the contract nor can his certified check be forfeited if he declines to undertake the work for a price that certainly would involve a loss to him. This is the ruling recently made by the Kentucky Court of Appeals in the case of Cole vs. the Board of Regents of the Murray State Normal School.

Intensive Service the Keynote of New A. E. I. Field Work

By Dividing Country into Ten Sections With Fieldman for Each It Is Planned to Bring Association Influence Closer to Local and Individual Problems

By R. C. HILL,
Field Director, A. E. I.

THE field work of the Association of Electragists, International, within the last two months has swung into a new phase of activity. From now on as much if not more attention will be paid to local work, local problems and local organization as to national work and the plan of operation for the field representatives is such that personal and individual service to those already members of the association will be of equal importance with increasing the membership.

During the year 1926 considerable thought had been given to methods for increasing the membership of contractor-dealers in the A. E. I., since it was realized that with a larger membership the association would be in the position to represent the contractor-dealer field more completely when co-operating with other national organizations and would also be enabled to broaden the scope of aid to the individual member when confronted with a problem which was purely local.

R. C. Hill, Field Director, A. E. I.

W. P. O'Brien W. J. Tighe D. A. Fleming
Field Representatives, Association of Electragists, Int.

Following the selection of a field director whose duties are to co-ordinate the work nationally, it was decided that the ideal of service to the individual member could be more nearly attained if the country were divided into sections of such size that the fieldman could visit each locality several times a year at the least. Accordingly an intensive study of the country was made to discover the number of potential members throughout the United States and Canada and their geographic location. With this information in hand it was thought best to divide the country into ten territories and assign a field representative to each.

As shown on the accompanying map, the territories are as follows: No. 1, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and Maine, New Brunswick and Quebec; No. 2, New York and the eastern part of Ontario; No. 3, Pennsylvania; No. 4, New Jersey, Delaware, Maryland, Virginia, North and South Carolina, Georgia and the larger part of Florida; No. 5, Illinois, Iowa, Minnesota, Wisconsin, Manitoba and the western part of Ontario; No. 6, Michigan, Indiana, Ohio, Kentucky and West Virginia; No. 7, Oklahoma, all of Texas except the extreme western part, Louisiana, Mississippi, Alabama, Tennessee and the northwestern portion of Florida; No. 8, North and South Dakota, Nebraska, Colorado, Kansas, Missouri, Arizona, New Mexico and the western portion of Texas; No. 9, Washington, Idaho, Montana, Oregon, Wyoming, Utah, Nevada, British Columbia, Alberta and Saskatchewan; No. 10, California.

To date three men have completed the training course which has been established at A. E. I. headquarters and have been assigned to their territories. W. P. O'Brien is now traveling in the territory designated as Number 1, which includes New England and Quebec. W. J. Tighe has been assigned to the Southern Atlantic Coast section designated as Number 4 and D. A. Fleming to the Eastern Great Lakes section designated as Number 6.

Other field representatives are to be chosen and trained within the next few months until the entire country is covered as thoroughly as necessary and provisions will be made to put additional men on in any territory when the membership grows to the point where one representative cannot handle it and still give personal service to every member who wants it.

An idea of the service the A. E. I., through its new field representatives, is ready to render the membership may be gained from this outline of the course of training through which each field man went before being sent out into his territory. First comes organization service which, in a word, means assistance in organizing local and state associations and formulating a program for them which is fitted to their individual needs. This may be assistance

in the promotion of a municipal licensing or inspection ordinance, the establishing of a bureau of information for both members and the public, improvement of business practices, training of local field men, etc., or in the case of a state organization help in the promotion of enabling acts which will permit municipalities to pass electrical ordinances, the explanation of the A. E. I. trade policy, gaining of the underwriters' co-operation, doing the preliminary work for state conventions, etc.

Under the heading of technical service the field representative will be ready with information on estimating and will bring to the attention of the members the facilities of the A. E. I. for research work in the field of cost analysis, studies of new methods, new tools, greater efficiency and wiring surveys.

The business service is particularly important, having to do with the accounting system, statistics on overhead, wages, inspection and engineering data and the field man is prepared to add to this his advice on individual problems such as financial statements, credits, time payments and merchandising.

Special service deals mainly with the insurance offered through the A. E. I. to its members. This includes group life insurance, automobile insurance at lower rates than can be obtained elsewhere, compensation insurance, liability insurance and the Electragists' purchasers disability protection on time payment sales. The value of these policies was carefully determined by the A. E. I. before the association recommended them to members, but many members have neglected to take advantage of them. It is felt that it only needs the urge of personal solicitation to convince members of the savings they can effect and the security that will be theirs under these policies.

As President Fowler said in an address before the National Electrical Manufacturers' Association, one of the intangible benefits of the trade association is to nationalize local thinking. In order to accomplish this local associations should be active, should have programs that arouse the interest of their members and should have some channel through which they can be constantly in touch with the national headquarters. Through this newly-inaugurated system of smaller territories with a field man for each it is believed that the contractor-dealer industry can soon become the closely-knit and properly inter-related field which it should be.

ORGANIZATION SERVICE	TECHNICAL SERVICE	BUSINESS SERVICE	INDUSTRY SERVICE	SPECIAL SERVICE
Locals	***Estimating***	***Accounting***	***Code Work***	***Insurance***
Assistance in Organizing	Cost Data on	Standard System	Electragists' Wiring Standards	Group Life Insurance for Members & Employees
Model Constitution and By-Laws	Rigid Conduit	Job Record Forms	Trade Policy Studies	Automobile Insurance at 20% Saving
Training Local Field Men	Flexible Conduit	Price Records	Standardization Work	Electragists' Purchasers Disability Protection on Time Payment Sales
Conferences of Secretaries	Armored Cable	Uniform Proposals	Legislation	Compensation Insurance
Visits from A.E.I. Advisors	Metal Molding	Time Records	Council on Industrial Relations	Liability Insurance
Model Ordinances	Knob and Tube	Profit and Loss Forms	Contact with Other Industry Groups	
Code of Ethics	Motor Installing	Overhead Analysis		TRADE MARK MEMBER
Bureau Information	Estimating Forms	***Statistics***	***Publicity***	
Improvement of Competition	Individual Advice	Overhead Data	A.E.I. Speakers at National Meetings	
	Estimating Classes	Wage Rates		
States	A. E. I. Instructor or Extension Courses	Inspection Data	***Organized Strength***	
Legislation: Licensing		Engineering Data	Leadership in Contractor-Dealer Representation	
Segregation of Sub-Contracts	***Research***	Bulletins	Watchfulness of Electragists' Interests	
Trade Policy	Cost Analysis	***Advice On***		
Underwriters' Cooperation	Studies of New Methods	Individual Problems		
Conventions	Tools	Financial Statements		
	Efficiency	Credits		
	Wiring Surveys	Time Payments		
		Merchandising		
		Stores		

Services the A. E. I. Renders Its Members Either Through Its Field Representatives or Its Headquarters' Staff

There Will Be a Fieldman in Each of the Ten Territories Outlined Above

Office Building Installation

(Continued from Page 29)

floor surface. Before pouring the floors the duct was supported where passing over beams by "U" shaped beam-hangers and was fastened to the beam by a machine screw to prevent it from being knocked out of place.

Where the duct passed over the metal pans it was placed directly on top of them and raised to the proper height with metal wedges in order to be flush with the finished floor surfaces. The duct was laid level and at the required elevation by means of an engineer's level and the finished floor was worked to the duct as the ground line.

Another question, very simply solved, concerned the different heights of the beam supports. By making them all slightly too high the exact height was obtained by pressing on them and spreading the legs of the "U." Without any great difficulty the desired height was then reached.

After the installation of the duct, flush with the cement floor, the linoleum floor covering was placed over the latter and the junction box cover remained the only part visible in the system. Connection with the underfloor duct is made by drilling into it and inserting brass stand pipe connections for the different services. These standpipes have been particularly designed for telephone, 110-v. direct current, and low tension service.

The Electro Construction Company of Philadelphia made the electrical installation.

B. C. Fowler, Lansing

BECAUSE of the automobile, B. C. Fowler is now in the electrical contracting industry. Which will be explained further on. Mr. Fowler was born in 1886 at Coronado, Kan., but moved to Eaton Rapids, Mich., with his family in time to receive his education there. This being finished in 1904, he trekked on to Lansing, Mich., where he obtained a job in that pioneer of the auto industry, the Olds Motor Works, the job being to wire up the engines of the curved-dash, one-cylinder speedsters of that day. But in the fall of that year the Capitol Electric Company was given a contract for the electric wiring of the Olds Motor Works and he shifted to the employ of the contractor. After that job was finished the wanderlust gripped him again and he went to Saskatoon, Sask., as assistant superintendent of the municipal lighting plant. But by 1908 he was back in Lansing with the Capitol Electric Company and four years later he entered a partnership with W. F. Barker and L. A. Cole of the Barker-Cole Electric Company. This soon became the Barker-Fowler Electric Company with Mr. Barker as president and Mr. Fowler as secretary-treasurer and in 1920 they purchased the contracting end of the Capitol Electric Company which turned then to a strictly wholesale electrical business. The Barker-Fowler Company now does a general electrical repair and construction business including the sale of motors, being the second largest distributor of General Electric motors in the state. They specialize in industrial and commercial work. One of the larger jobs recently completed was the three-hundred-room Hotel Olds. Mr. Fowler is a member of the Lansing Electric League.

Electragists You Should Know

Albert A. A. Tuna, New York

THOUGH still comparatively young in years, Albert A. A. Tuna has become widely known throughout New York State for his activity in association affairs, having been for the last six years one of the most faithful and hardest workers in both local and state bodies. He was born in New York City on September 11, 1897, and received his education in the grammar and high schools of the metropolis and in the College of the City of New York. Shortly after his graduation from college, the United States entered the European war and Mr. Tuna promptly enlisted in the army, serving a number of months overseas. On his return he decided to go into the electrical business and in July, 1919, formed a partnership with his brother Laurence under the firm name of the Tuna Electrical Company. This business grew to such an extent that in January, 1926, it was thought best to form a corporation to allow for expansion. Immediately after entering the business in 1919, Mr. Tuna saw the advantages, even the necessity, of membership in a strong local association of electrical contractors and he joined both the Independent Associated Electrical Contractor-Dealers of Greater New York and Group No. 2 of the New York Electrical Board of Trade. He has been secretary of both organizations for the past three years. In this capacity with the Independent Associated organization he edits a monthly bulletin which carried a column "Tunaville Topics" that has attracted wide attention for its trenchant style. In addition to his work as an electrical contractor, Mr. Tuna is treasurer of Sartuna, Inc., real estate operators.

Chats on the National Electrical Code

A Monthly Discussion of Wiring Practice and Questions of Interpretation, Presented with a View Toward Encouraging a Better Understanding of the Industry's Most Important Set of Rules

By J. C. FORSYTH,
Supervising Engineer, Bureau of Electricity, N. Y. Board of Fire Underwriters

Gas-Filled Incandescent Lamps

Rule 1503-b states that "indoor fixtures carrying gas-filled incandescent lamps shall be wired with conductors having approved heat-resisting insulation." It is now the regular practice of lamp manufacturers, so we are informed, to use some inert-gas in all lamps of 50 watts or over. This being the case, it would require, according to the rule just quoted, to wire practically all fixtures with conductors having heat resisting insulation. The first sentence of Rule 1402-d reads "Approved fixture wire, approved flexible cord or approved rubber-covered wire shall be employed unless the wiring is exposed to temperatures in excess of 120 deg. F. (49 degrees C.) in which case conductors having slow-burning or other heat-resisting covering shall be used." If, therefore, a fixture supplied with gas-filled lamps is so constructed that the wiring is not exposed to a temperature of over 120 deg. F., this rule would permit of the use of rubber-covered conductors.

Now where this condition exists which rule should govern? This is not a hypothetical case by any means as nearly every equipment could be disapproved under the first rule, and the majority of them approved under the one last mentioned. From reports of electrical troubles, particularly in sockets, it would seem that a more general use of heat-resisting insulation on fixture wire would be advisable and of considerable benefit to the public. These two rules, however, should be so worded as to avoid the conflict in meaning which now exists and should state more clearly the kind and type of fixtures requiring heat-resisting insulation on the wires.

The fibre lining of sockets, if subject to a temperature in excess of 120 deg. F., becomes brittle and, therefore, of little value. Several attempts have been made to demand a type of socket that would not require any lining if used with lamps of 100 watts and over, and I am inclined to believe that such a rule would be fully justified.

Hidden Splices

In order to show some of the difficulties in the way of doing good work to say nothing of making a proper inspection, your attention is directed to the accompanying Figure No. 1. The feeders are concealed in the wall, and at a point immediately back of the meter pan is a small 4x4x3 box into which the 1½ in. conduits terminate and through which the main conductors are carried. These wires are taped and two No. 0 wires are brought through the back of the meter pan in which has been placed a straight line cutout. Conductors from this cutout feed the panel board near by. Although this equipment is only a few months old, yet already an extra connection has been made as can be seen. The whole arrangement is poorly designed and badly executed. This is not an isolated case, but typical of thousands of equipments in which adequate provisions have not been made to properly accommodate the electrical work. Electrical contractors have allowed their work to be crowded into corners or cramped into spaces entirely unsuited to the needs of the service. Why not demand more recognition from architects and builders?

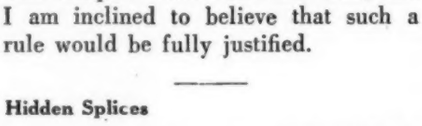


Figure No. 1

Separate Feeders for Store Lighting

Most of the apartment houses located on principal thoroughfares arrange the space on the ground floor for small store occupancy. In the original layout of the wiring, it has been a general practice to supply either all or several of these stores by a single set of feeders. The size of these conductors is based presumably on a normal amount of illumination without any consideration of the need for an extra amount of light for show window purposes. As a result, after the first three or four tenants are supplied, the capacity of the feeders is reached and other tenants coming later are obliged to go to the expense of providing separate feeders from their premises to the main source of current supply.

Why wouldn't it be worth while for the contractor to install a separate set of feeders to each store and thus incidentally save a lot of argument with the inspection department, which is obliged to refuse to allow further load to be connected to the existing feeders?

Grounding of Frames of Portable Motors

Rule 1001-b reads "The frames of portable motors which operate at more than 150 volts shall be guarded or grounded. It is recommended that the frames of portable motors which operate at less than 150 volts be grounded

when this can be readily accomplished." Does this rule mean just what it says or did the framers of the rule unintentionally or otherwise omit two words? It has been contended that the words "to ground" should have been inserted after the word "volts." We believe that the words "to ground" were purposely left out and that when a portable motor either a.c. or d.c. operates on a circuit having a difference of potential of over 150 volts that the frame must be grounded. It is often quite difficult to comply with this rule as the means for properly grounding the frame is not always available. The method employed in one or two cases was to attach a cord of sufficient length to reach from the motor frame at any point where it was to be used to some suitable ground and leave it to the operator to make the proper attachment in each case. The inspection department did not, however, send an inspector to examine this connection each time the position of the motor was changed.

Conduit Nipples

Where gangs of meters are installed, it is a matter of considerable expense to cut and thread conduit in short lengths to make connections between meter cabinets. It has been a practice on the part of a good many contractors to use stock gas pipe nipples about 8 in. in length for this purpose. We are receiving complaints to the effect that these nipples are not properly treated to prevent rusting, that they are not reamed nor have they been cleaned of scale and rust. It has, therefore, been decided not to accept nipples made from gas pipe but to require that they shall be cut from standard conduit or be procured from the manufacturers. These nipples, in all sizes and lengths can be purchased in the market from practically all supply houses.

An Old Rule Which Has Outlived Its Usefulness

There is a requirement in the present Code that has appeared in every issue of that publication. Repeated efforts to eliminate it have been unsuccessful. It seems to stand up under all attacks and to bear a charmed life. Although some changes in wording have occurred in it, yet there has been no change in the meaning. It has appeared in various sections of the Code and can be found in the current issue in the last sentence of Rule 501-h "Wires shall not be fastened with staples." The rules are very careful to state just how all conductors shall be supported and secured. There would seem to be no more reason to retain this prohibition against staples than to insert new rules forbidding the use of nails, hooks, screw-eyes, pins, or other methods of support, many or all of which may be found occasionally in use. The principal objection to this rule is that in a negative statement of this kind to specifically mention one thing of a group leads to the inference that the others are not prohibited and may therefore, be employed. And, by the way, why is any part of rule 501-h necessary? The number of pages in the Code might be materially reduced if all superfluous rules or sections were eliminated.

Grouping of Wires on Panel Board Cabinets

Figure No. 2 here shown is that of a twelve circuit power panel recently

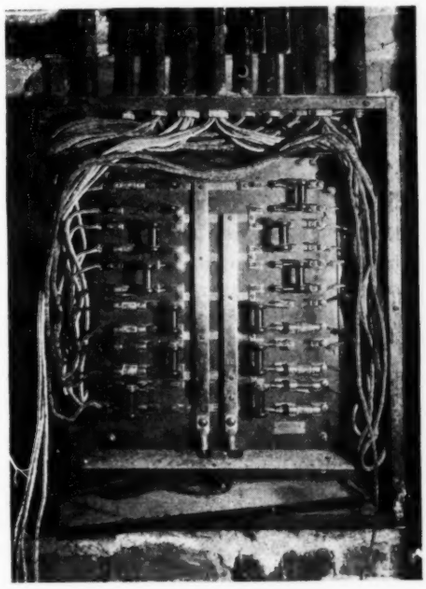


Figure No. 2

installed in New York City. It will be noted that the contractor has removed the slate barriers intended to form the gutter spaces, except the one at the bottom of the panel. The object of referring to this matter is to call attention to the large mass of rubber covered wires which have been so placed that in case of any electrical trouble arising in the cabinet, the insulation of all branch feeders, as well as main conductors would be destroyed. Such fires are occurring repeatedly and the replacement cost is quite heavy to say nothing of the interruption to business which is often a more serious item than the direct loss from fire. The Code does not place any limit on the number of wires that may be located in the gutters of cabinets; but for the benefit of all concerned would it not be far better, in the case just shown, to provide two panels of six circuits each and two independent cabinets, side by each if necessary, and thus reduce by 50 percent the fire loss, the amount of machinery put out of commission and the time required to replace the equipment in operation. We are in the habit of putting too many eggs in one basket and when the inevitable trouble comes we wonder why the losses are so heavy.

Multiple Conductor Service Cables

Rule 403-C reads "Multiple-conductor cables shall be kept at least 6 in. from adjacent woodwork and at least 12 in. from overhanging projections of combustible material, unless approved fittings which afford equivalent protection are used."

A situation has arisen involving a large number of service installations in which the service cables are secured to the buildings in such a manner that there is but a 2-in. clearance between the cables and adjoining woodwork. The question has been raised as to whether or not the rule just quoted was intended to apply to the support of the cable if carried along the face or down the side of the building only, or was it also intended to cover the condition where the cable was "dead ended" at the insulating support?

What is the hazard which the rule seeks to guard against in this particular case? In the first place the probability of a short circuit or breaking down of the insulation is greatest at the point where the cable is bent around the insulator and turned back over itself. As there is seldom any fuse protection on a service line, a short circuit at this point would undoubtedly ignite the insulation and in turn communicate to the building. In fact such fires have occurred causing considerable loss. In the second place there is or should be no difficulty in obtaining the required separation of 6 in. from the nearest woodwork. In the third place the rule

is clear and definite in its wording and can hardly be construed as applying to horizontal or vertical runs only. It would, therefore, seem that the inspector was correct and that the cables as installed are not in compliance with the Code.

Nails for Securing Armored Cables

One of the most difficult things which an inspection department has to deal with is the substitution by the contractor of "something just as good." There is nothing in the Code clearly stating how armored cables should be fastened in place. For many years no one thought of employing anything for this purpose but straps which fitted over the cable. Then came the use of staples. Many objections were made to them by inspectors but finally they were allowed where carefully driven and did not injure the armor. Now we are finding nails used quite extensively, the nail being driven into the side of the beam or joist for a short distance and then bent over the cable. If the work is criticized, the contractor replies, "The cable is fastened, isn't it, what more do you want?" But the use of nails does not secure the cable in a satisfactory or permanent manner. It is probable that an order will soon be issued prohibiting the use of nails for this purpose.

Support of Wires

Rule 501-K reads: "Wires in dry places shall be rigidly supported and for voltages not exceeding 300 volts shall be separated 2½ in. from each other and ½ in. from the surface wired over." Attention has been called to the fact that there is nothing definite in the Code in reference to the way in which wires in wet or damp places should be supported except the last sentence of this same rule which reads: "In damp places a separation of at least 1 in. from the surface wired over shall be maintained for all voltages." Under this rule the wires in damp places could be festooned or looped from one support to another just so long as they did not come closer to the surface wired over than 1 in. I may be accused of playing with words, but such is not the case. The rule should be clear and explicit and not depend on reading between the lines to arrive at the real meaning and intent of the rule. Would not this rule be improved by the following wording: "All wires shall be rigidly supported. If the voltage does not exceed 300 volts and if the wires are not subject to moisture they shall be separated 2½ in. from each other and ½ in. from the surface wired over. If the voltage exceeds 300 volts or if the wires are subject to moisture a separation of 4 in. between conductors and a minimum distance of 1 in. from the surface wired over shall be maintained." The only statement I can find in the Code having any bearing on this point is the general one contained in the second fine print note under Article 2 which reads: "It is recommended that in all wiring attention be paid to the mechanical execution of the work."

End Line Cutouts at Meters

Rule 806-B reads—"When the service fuses are locked or sealed, or are located at the outer end of the service conduit, duplicate main fuses or branch fuses connected on the load side of the meter and enclosed in an approved casing or cabinet, so as to be readily accessible to the occupant of the building, shall be provided."

What is meant by "service fuses"? Can there be but one set of service fuses in any building equipment supplied by a single service? This would seem to be a very simple question until you begin to read into the rule the provisions intended to provide accessibility by the occupant to the main line fuses at the point where his current supply is taken from the main feeders. It has been customary for some inspection departments to call for main line fuses on the load side of meters in all cases where the meter fuses are not accessible to the consumer without regard as to whether or not the main service fuses at the point of current supply to the building are accessible. Recently in the wiring of an apartment house, where a master meter was installed by the lighting company and all sub-meters provided by the owner, it was ruled that end line cutouts would not be required on condition that the fuses in the meter pan were so arranged that ready access could be gained.

It would appear that the rule is not clearly understood or that its real intent is not clearly stated. The service fuses may be and often are of quite large capacity and would not be affected by any ordinary circuit disturbance.

Service Switches

There is some misunderstanding regarding the types of switches required by the Code. A controversy has recently arisen between a contractor and a lighting company, each party appealing to the Code as supporting his position. We will endeavor to state the Code requirements briefly:

1—A service switch must be enclosed in an approved cabinet unless mounted on a switchboard or panelboard which is accessible to qualified persons only.

2—Unless additional switches are provided for control of individual circuits the service switch must be externally operable.

3—A service switch controlling a three-wire D. C. or single phase system with grounded neutral may be either single or double pole.

4—If double pole the switch blades must open the ungrounded wires only.

5—In no case must the grounded wire be opened by the switch except by a circuit breaker which simultaneously opens all conductors of the circuit.

6—Some suitable means must be provided within the cabinet to disconnect the grounded conductor. In the 1923 Code it was required that the design of the switch had to be such as to prevent the breaking of this conductor unless both of the outer conductors were opened. This requirement is not found in the 1925 Code.

There are several points in Rule 405 which need clarifying. In Sections H and I the term "circuit breaker" is used where the word "switch" would be more appropriate. A switch may be a "circuit breaker" in a very broad sense, but something more than a switch is implied in the ordinary use of the term "circuit breaker." In Section L the wording is not clear, as in the first sentence a service switch is required for each building of a group served by a common feeder. The second sentence states that this may be accomplished by a disconnecting switch within the building served or by a feeder switch. If a feeder switch is provided, is a separate switch also required in each building? Does the fine print note under Section E refer only to apartment houses or was its application intended to be general to all equipments? If the circuits are separately metered and these meters and switches are not grouped could the main service switch still be of the non-externally operable type?

Red Seal Progress

© S.E.D.

THE end of February, which concluded the second year of Red Seal operation in the United States, saw approximately three thousand Red Seal applications and awards and the further expression of interest in the Red Seal of communities not at present operating under the plan.

Communities which have made application for Red Seal licenses are Racine, Duluth, Columbus (Ga.), Muskegon, Jackson, Omaha and Evanston. Those which have expressed a desire for information on the plan are Boston, Washington, Easton, Utica, Richmond, New Orleans, Birmingham and Alexandria.

Operation of the plan was launched in Scranton, Pa., at a dinner meeting on February 9, attended by 250 members and guests of the Electric League of Scranton. Over 100 builders, architects and realtors were present and many of these voluntarily endorsed the plan at the conclusion of the meeting.

In both Washington and Birmingham league meetings have voted to operate the plan, but it will be some time until the final details are arranged.

Suggested quotas for 1927 have been forwarded to Red Seal communities by the Society for Electrical Development. These quotas have been calculated on the basis of past performances, the 1920 population of the community and a comparison of the number of Red Seal homes with total number of residence building permits during the year. It is felt that if a total of five Red Seal homes per 10,000 population is obtained during 1927 it will be a very satisfactory showing.

In the Field With Red Seal

Kansas City: The Electric Club is to employ a part-time field man to do the contacting for Red Seal. It is thought that if without the services of a field man it was possible to secure 48 Red Seal houses in eight months of 1926 this total can easily be tripled in 1927. The total number of outlets in these 48 homes, incidentally, was 26 percent over the number required under the Red Seal specifications.

Detroit: The contractors still continue to be responsible for obtaining a large proportion of the Red Seal total in the motor city. Within the last month nine different contractors have landed ten Red Seal jobs.

Hudson Valley: To enhance the prestige of the electrical contractor, the local league has arranged that in future the contractor shall be the one to present the customer with the Red Seal certificate. It is thought that it will give him the opportunity to call attention to the many appliances that can be used with the adequate wiring facilities provided by the plan.

Youngstown: The local league made contact with 571 houses out of a total of 952 constructed during the year and landed 72 of these or about twelve percent of those approached. On these 72 jobs there were installed a total of 7,284 outlets or an average of 101 per job. Each job averaged over 20 convenience outlets. During six months of the year the league operated eight illuminated billboards on Red Seal, located on prominent highways.

Rochester: Rochester Red Seal established an enviable record during January when the applications for Red Seal jobs represented 27 percent of the total number of building permits.

Border Cities: The Electric Service League of the Border Cities, Windsor, Ont., reports that in the few months of its operation ten Red Seal homes have been completed, forty-seven applications are pending and thirty promised.

Toronto: The number of Red Seal houses obtained in Toronto during 1926 was 806, which was forty percent of the total number of houses built in that city during the year. "The time is approaching," says the Electric Service League, "when two-thirds of all Toronto housebuilding will be Red Seal."

A New Appeal to Ownership Pride

IN SOME of its recent advertising, a sample of which is shown at the right, the Electric League of Pittsburgh has attempted to play up the pride of ownership from a new angle. The Schenley Arms Apartment, named in the advertisement, is Pittsburgh's newest and best example of everything the modern apartment building should be and everyone in town is aware of that fact. Therefore, the announcement that this apartment has Red Seal wiring is an endorsement of the Red Seal plan that every house owner and house builder can readily understand. While the copy plays strongly on the excellence of the Schenley Arms Apartment, it also brings in an explanation of what the Red Seal means in terms of occupancy—that it affords easy and quick utilization of all the comforts of electricity with enough lights and enough outlets placed just where they are needed. And it also tells builders that the Red Seal helps to sell houses and to keep apartments rented.

ELECTRIC
HOME
The Schenley Arms Apartment
THE electrical wiring in this apartment is up to a standard not down to a price.
This means future occupants may easily and quickly enjoy all the comforts of electricity, enough lights, enough outlets just where they want them—even as their demand for them increases.
Red Seal makes houses sell and keeps apartments rented.
ELECTRIC LEAGUE of PITTSBURGH
261 Westinghouse Building
Atlantic 1111

The Electragist

Official Journal of the
Association of Electragists—International

S. B. WILLIAMS
Editor

H. H. STINSON
Associate Editor
C. A. REITER
Engineering Editor

Demobilization Without Demoralization

The business of electrical contracting is now entering upon a period of reconstruction. For several years past the volume of new building has been growing at a record pace. The peak has now been passed.

To handle this and the other normal business the electrical contracting industry has had to grow. Today there are probably between thirty and forty thousand electrical contractors.

There is not the business today, however, in every section of the country or in every class of building that there was a year ago. We cannot turn to the unwired building as we did a few years ago, for the homes and factories are today pretty nearly all wired for service.

If new construction continues to drop off slowly there will be some who will not get work. They will either drop out of the picture or else try to hold on by buying jobs at low bids. If work falls off and wiremen are unemployed we will find that we have given building labor the reason for forcing the five-day week in this trade.

Now the picture is not dark at the present time, but now is the time to think about what is in the offing. Unless we are to leave this industry stranded during the period while we are readjusting ourselves to normal building activities we must find some outlet for their efforts.

Red Seal by making an ordinary job into a real job is one way. It provides for two to three times the labor that an ordinary job does.

Reinspection is another avenue. A thorough reinspection of any city will disclose a large number of serious fire hazards in the wiring of buildings of all classes. This situation ought to be corrected. It is to the advantage of the public to have these fire hazards removed. The correction of these dangerous conditions will provide considerable work for the contractor, besides making a market for the manufacturer and jobber.

The biggest opportunity of course will come from rewiring occupied premises up to the point of adequacy. By throwing their effort into this work the contractors will find that they will not suffer for want of work. At the same time it will be possible to demobilize the industry to its normal strength without demoralization.

Nor let it be thought that rewiring pertains to homes alone—almost every class of building is a prospect for rewiring. Factories have worked to the very load limit of the feeders and beyond, office buildings and hotels need renovating, apartment houses without conveniences are becoming vacant. There are innumerable opportunities for rewiring outside the residential field.

Now is the time for the local electrical industries through their leagues to evolve some plan for educating the public.

We are now geared up for peak operation, but the peak has passed. Let us not have to demobilize too quickly.

Code Interpretations Assured

The Electrical Committee has approved the suggestion that a Code interpretative board be set up. This board, it is understood, will become operative very soon as the N. F. P. A. executive committee had previously approved the plan.

Everybody interested in having wiring installed properly will welcome the organization of this board. The chief inspectors will find it a great help in relieving them of the responsibility of making decisions on points none too clear in their own minds. The contractors will find it a help in securing a review of situations in which they may become hopelessly deadlocked with the inspection departments.

The board as proposed should have the confidence, respect and support of the entire industry. It will be sufficiently flexible to permit it to receive a case, review it and render an opinion quickly. At times quick action will be most helpful.

It must be remembered, of course, that the board's opinions are merely informatory and bind no one. It is believed, however, that the industry will accept these opinions as representing the best judgment possible.

Licensing Dealers

News of the success of the Portland, Oregon, ordinance for licensing electrical dealers is spreading. This year we can expect to find not a few municipalities put such an ordinance into effect—and judging by the need, the time will not be too soon.

The purpose of such ordinances is to prevent the sale of sub-standard appliances and wiring material. Today the market is flooded with cheap sub-standard stuff.

As it became apparent that Underwriters' Laboratories label was not necessary in order for a manufacturer to market his goods, the production of sub-standard material grew by leaps and bounds. For instance, eighty-five percent or more of the lamp cord made in this country today is sub-standard. This has produced a most serious fire hazard because this material is almost all intended for installation by the uninitiated layman.

On the other hand, there are certain drawbacks to dealer licensing. Does the plan contemplate the sale of materials and appliances approved by Underwriters' Laboratories only, or may other laboratories furnish findings for approval? If so, what shall the standard be—a national standard or one proposed locally? Is the local chief inspector to be the sole authority?

We see much that is good in the idea and naturally are for anything which will better safeguard the public, but we would not like to see such an ordinance get into the present scrambled condition of local wiring ordinances. It is time that we put a halt to the sale of sub-standard wiring materials and electrical appliances because they constitute a public hazard.

Labor Waste

There is no doubt that labor is less efficient today than it was before the war. There is no doubt that some of this is willful. At the same time no small part of the lower labor productivity is directly due to mismanagement on the part of the contractor.

Incompetent foremen, poor layouts, insufficient materials, accidents, and dozens of other things which conspire to make the job lag are definitely within the control of the contractor.

Labor production can be increased without pushing the men by careful planning of materials, deliveries, layouts.

Red Seal's Second Birthday

Two years ago this month the first license for Real Seal operation was issued to a league in the United States. Sometimes it has seemed as though the progress of the plan has been discouragingly slow and then again this desire on the part of the national sponsor, the Society for Electrical Development, to go cautiously may have prevented serious back sliding, for it has been demonstrated that it takes money to catch the public fancy.

At the close of 1926 almost fifteen hundred homes in the United States had received Red Seal certificates. By the date the first United States Real Seal home is two years old we will have passed the 2,000 mark.

In the beginning progress must of course be slow and expensive, but each new Red Seal job makes the next so much easier. Today we have to sell Red Seal to the public, but let no one be discouraged, for before long the public will be demanding it.

No New Code This Year

The Electrical Committee went through a new procedure at its annual meeting last month. Instead of making a large number of revisions in the National Electrical Code, it tentatively adopted changes and recommended that they be given a field trial before final adoption and inclusion in the Code. This means that there will be no new Code in 1927.

A complete report of the tentative changes will be available to any community shortly through any of the national electrical associations. Should any community decide to put any or all of the changes into effect, they should keep close record of any apparent effects.

If any objections arise the Electrical Committee should be notified for this is in reality, not a test of the proposed rules only, but also a test of the principle of field trial. Such trials have been proposed at other times but always have met with opposition.

It is hoped that a number of communities will try out these proposed changes. They represent many of them brand new ideas in electrical Code making and it is, of course, most desirable, when the changes are definitely made, to have them as nearly right as is humanly possible.

It will be most interesting to see how the field trial plan works out in practice. Give it a chance, for it may open a very valuable avenue of information.

The Cost of Stock

What does it cost to maintain a stock of wiring supplies sufficient to take care of any job that might come up?

First, is the cost of working capital. How much more work could be carried on if this capital were free to take care of a large payroll?

Second, is the cost of rent and general overhead. How much could be saved in lower rent, stockkeeper's wages, breakage, inventory loss, etc., if stock were greatly reduced or eliminated?

Third, is the cost of delivery. If one has a stock from which all or most of his materials are shipped to the job, he must maintain one or more trucks. Could the cost of these be saved if the stock room were abandoned?

When one does considerable pick up work, a stock is necessary but where the job is of any considerable size, delivery can be made by the jobber direct to the job.

If contractors are located some distance from a jobber's stock they will have to maintain a stock of their own. In that event care should be taken not to have too large a stock for this ties up too much capital. Stock should turn as rapidly as does one's capital devoted strictly to contracting.

It is poor policy to buy in large quantities simply to secure a better discount, when by so doing capital will be tied up for a number of months. It is working capital that makes it possible for a contractor to make profit. The more of it that is tied up in stock the smaller his profit.

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Allegheny Valley	E. G. Jackson	12 West Third Street
Du Bois (C)	C. E. Blakeslee	11th and French Sts.
Erie (C)	R. D. Cu[illegible]	1605 N. Third Street
Lehigh Valley (C)	A. W. Hill	Bethlehem
Philadelphia (C)	M. G. Sellers	1202 Locust Street
Pittsburgh (C)	Fred Rebele	1404 Commonwealth Bldg.
Wilkes-Barre (L)	Ambrose Saricks	25 No. Main Street
RHODE ISLAND		
Providence (C)	H. E. Batman	36 Exchange Place
SOUTH CAROLINA		
Charleston (L)	J. P. Connolly	141 Meeting Street
SOUTH DAKOTA		
Sioux Falls	H. W. Claus	326 S. Phillips Ave.
TENNESSEE		
Chattanooga (L)	P. W. Curtis	725 Walnut Street
Knoxville (L)	Jerry G. Cason	303 West Church St.
Memphis (L)	J. J. Brennan	12-16 So. Second St.
Nashville (C)	J. T. Shannon	c-o Electric Equip. Co.
TEXAS		
Beaumont (C)	J. A. Solleder	Houston & Bolivar Sts.
Dallas (C)	P. B. Seastrunk	2032 Commerce St.
Houston (C)	J. W. Read	715 Capitol Avenue
UTAH		
Ogden	B. Kristofferson	2249 Washington Ave.
Salt Lake City (C)	C. Louis Collins	215 Kearns Bldg.
VIRGINIA		
Lynchburg (C)	J. L. Fennell	c-o Fennell & App
Norfolk (L)	A. W. Cornick	200 Plum St.
Richmond (C)	E. M. Andrews	15 N. Twelfth Street
WASHINGTON		
Seattle (L)	P. L. Hoadley	Seaboard Building
Spokane (C)	William Stack	W. 1121 Cleveland St.
WEST VIRGINIA		
Wheeling	Peter J. Erb	1414 Eoff St.
WISCONSIN		
Green Bay (C)	V. E. Grebel	531 S. Broadway
Madison (C)	L. A. Ring	2017 Winnebago St.
Milwaukee (C)	E. H. Herzberg	1604 Wells Street
Racine (C)	Joseph J. Small	1910 Linden Ave.
CANADA		
Montreal (C)	George C. L. Brassart	674 Girouard Ave.
Toronto (C)	M. McRay	24 Adelaide St., N. E.
Vancouver (C)	J. C. Reston	579 Howe St.
Winnipeg (C)	Fred Ball	300 Princess St.

(C) designates exclusively Contractor-Dealer organization.
(L) designates an Electrical League.

FEBRUARY ACTIVITIES

State Inspection and Licensing Law Approved by Florida Electragists and Inspectors

Joint Meeting of Florida Electragists and State Association of Municipal Electricians Draws Up Bill for State Regulation of Electrical Work With Provisions for Home Rule

AFTER several years of discussion and consideration of State legislation dealing with electrical work, the Florida Association of Electragists, at a joint meeting in Orlando, February 15, with the Florida Association of Municipal Electricians, made public the draft of a proposed bill to provide state inspection and licensing. The bill was approved by both associations without change and will be presented to the next session of the Legislature.

The bill, if made into a law, will set up state-wide electrical inspection in all incorporated cities and towns, based upon a state code governing installations. This code will have the National Electrical Code as a basis with the probability that many of the provisions will be stricter than corresponding rules of the N. E. C.

Local "home rule" is provided, permitting all municipalities which adopt the State Code or more stringent rules, to maintain their own municipal inspectors and retain inspection fees with the increased jurisdiction of inspection powers applying to all territory within a radius of five miles of the corporate limits of such cities or towns.

Licensing of electrical contractors is also called for by the bill. Examination will be by a State board of wiring commissioners with a nominal fee of $25 for original certificates and a renewal fee of $10. All present holders of municipal license certificates would be given state certificates without further examination and state certificates would permit holders to engage in electrical contracting in any and all cities and towns in Florida without additional examination.

The proposed board of wiring commissioners would be composed of five members, as follows: A registered architect, a municipal electrician, a master electrician, journeyman electrician and the state electrical inspector, all to be appointed by the Governor. All would serve without compensation with the exception of the State electrical inspector.

At the morning session of the Electragist organization Walter Monroe, Monroe Electrical Company, Tampa, was elected president and J. J. Newell, Orlando, was appointed to the executive committee.

The greater part of the afternoon session was devoted to discussion of the proposed legislation at a joint session of the two associations. Talks were made by H. B. Kirkland, Society for Electrical Development, and by Laurence W. Davis, general manager; A. E. I. After this meeting came a joint conference of the executive committees.

A number of informative and interesting papers were presented at the meeting of the Municipal Electricians, including: "The Founding and Development of the National Electrical Code," by C. M. Goddard; "Duties and Problems of an Electrical Inspector," by C. S. Graham; "Development of Fire Alarm Systems," by Charles Berst; "Police Alarm Signaling Systems," by George P. Allen; "Operation and Control of Traffic Signal Systems," by T. E. Cornell, and a paper on "Underground Wires and Cables," by C. J. Ziegler.

It was voted by both associations to hold two meetings yearly, both of them jointly. One is to be in February of each year at Orlando, while that during the summer will be at locations to be chosen later.

National Inspectors' Association Urged at New York Meeting

Unofficial proposals for the formation of a national association of electrical inspectors were made at an informal meeting held at the offices of the New York Board of Fire Underwriters on February 14. The meeting was attended by representatives of the Eastern Association of Inspectors, the Western Section of The International, the Northwest Association and the National Fire Protection Association, though none of those present were empowered to commit their respective organizations to any definite steps looking toward the establishing of a national association.

The proposition was made that it would be well to build on the present foundation of the International Association of Municipal Electricians, making each of the present divisional organizations a section of the International. No definite program for this was brought forward, however, and it is felt the process might be slow.

This gathering was the result of the convention call of the Florida Electragists and the State Municipal Electricians.

Boston Edison Plans to Help Contractors Merchandise

On January 15 the Edison Company of Boston organized a new division of the Relations with Allied Interests Department, known as the "Dealers' Service."

The duties of this division will be to assist in the proper display of electrical merchandise carried by the contractor-dealers doing business in the territory served by the Boston Edison Company. Realizing the importance of the proper display of merchandise in electrical shops and the lack of attention given to this feature on the part of electrical contractors due to inexperience along this line, the services of a first-class window dresser and display man were secured and extended to the contractors for their exclusive use. During the first two weeks of operation thirty-one contractor-dealers took advantage of the cooperative service offered by the Boston Edison Company and had their stores and windows dressed free of charge.

In connection with this service to the contractor the Illuminating Engineering Division of the company upon request of the display man will lay out for the dealer a proper lighting system for his store and windows. This lighting feature is suggested in order that the contractor may make his own shop an example of what a first-class store lighting job should be.

The lighting experts of the Boston Edison Company and the contractor-dealers are out to sell the Red Seal store idea to the merchants of New England and look forward to some good business in rewiring of stores.

The slogan adopted by the Dealers' Service Division is "Make the Passer Buy," and in many cases where shops closed at 5 o'clock in the evening the windows now remain open until midnight by means of a time clock.

New York Ends Evil of Special Permits

After August 1, 1927, the Commissioner of Water Supply, Gas & Electricity of New York City, will issue no more special permits to do wiring, thus ending a situation which has been complained about by local electrical contractors for some years. This is the result of an ordinance which was introduced into the Assembly through the efforts of the ordinance committee of the contractors' group of the New York Electrical Board of Trade and signed by the Mayor on January 25.

The intent of the original ordinance, passed several years ago, was to permit out of town contractors to do work in New York City without waiting for the formality of taking an examination for license, examinations then taking place at widely separated intervals. However, the effect of the legislation was to make it possible for irresponsible contractors and those who were unable to pass examination for license to obtain special permits. At present license examinations are being given so frequently that the necessity of taking out a license does not tend to delay an out of town contractor in doing work in New York City.

Colorado State Meeting in April

Believing that a state-wide meeting, similar to that held March 26 of last year, will do a great deal towards the linking together of all branches of the industry in Colorado, the advisory board of The Electrical League of Colorado has decided that the League will again foster such a meeting this coming April. A definite time has not as yet been designated.

Pomona Has Plans for New Ordinance

A new ordinance to regulate electrical work in the city of Pomona, Cal., is under discussion at the time of writing, with the entire contractor-dealer group of that city being in agreement on the need of such an ordinance.

Lighting Equipment Industry Closes Largest Exhibition and Convention in Its History

Convention Includes Meetings of Four Associations and Shows Harmony in Lighting Field Never Before Attained

THE total attendance during the National Lighting Equipment Exhibition at the Hollenden Hotel, Cleveland, Ohio, was approximately 6,000. Thirty-five hundred dealers and architects registered at headquarters from all sections of the United States and Canada.

The exhibition marked a turning point in the willingness of the lighting equipment industry to get together to discuss common problems, for through the courtesy of the Artistic Lighting Equipment Association meeting facilities were provided for the conventions of the National Association Lighting Equipment Dealers, New York Lighting Fixture Merchants' Association, A. C. E. Section, Electragists International, Illuminating Glassware Guild and Associated Lighting Equipment Salesmen.

There were 100 manufacturers exhibiting, showing parts and supplies, wiring devices, chandelier, wall brackets, floor and table lamps and novelties. While the exhibit was designed largely to be educational and to show what the market offered in lighting equipment, an unusually large volume of business secured was reported.

The exhibition was opened by a luncheon on Monday, January 31, at which the delegates were welcomed by William R. Hopkins, city manager of the City of Cleveland. After a short address of welcome by Fred R. Farmer, the president of the A. L. E. A., the exhibition was officially opened by G. P. Rogers, managing director of the Artistic Lighting Equipment Association.

Mr. Farmer officially welcomed the industry to the convention and urged it to line up behind the slogan "Double the industry in four years—work and stick."

One of the outstanding features of the convention meeting of the Artistic Lighting Equipment Association was the address of J. William Schulze, vice president of the Association and president of Alfred Vester Sons, Inc., who outlined the progress that had been made by the organization since their meeting in Atlantic City in the summer of July, 1925, when it was decided that radical changes would have to be made in the conduct of the affairs of the organization and that a man would have to be secured to carry on the work.

G. F. Laube, Laube Electric Company, Rochester, N. Y., was elected president of the National Association of Lighting Equipment Dealers at the annual election held in the Assemby Hall

Wednesday afternoon. H. I. Sackett, of Sackett Electric Company, Buffalo, N. Y., was elected vice president. Mr. Fred H. Smith, Scranton, Pa., was elected treasurer.

Mr. Laube has been acting president since the resignation of E. R. Gillet, Toledo. Mr. Sackett was already vice president and thus was re-elected.

In the election Wednesday several dealers who have not heretofore been active in the association were chosen directors. The directors elected are: E. W. Hoek, Netting Company, New York; E. R. Gillet, Toledo; Joseph E. Frechie, Joseph E. Frechie Company, Philadelphia; George Donovan, Barber-Donovan, Inc., Rochester; F. G. Burdorf, Burdorf Company, Louisville; H. H. Smith, W. B. Catlett Company, Richmond; Charles Anderson, Minneapolis; J. C. English, English Company, Portland, Ore.; L. L. Jones, Jones Electric Company, Atlantic City, N. J.; E. L. Evans, O. R. Evans & Brother, Washington, D. C.; Samuel Frost, New York; George J. Hertzschuch, Artcraft Fixture Studio, Newark, N. J.; G. E. Schwab, Schwab Lighting Company, Detroit; A. L. Oppenheimer, Enterprise Electric Company, Cleveland; Henry Weisberger, Liberty Electric Company, Cleveland.

Ray W. Smith continues as business manager and secretary.

Hoover Wins Suit Against Unfair Advertising

The Hoover Company, manufacturers of vacuum cleaners, recently won its suit against the Vacuum Cleaner Specialty Company, Inc., of New York City, and was given a Federal consent decree restraining the latter company from certain methods of advertising which the Hoover Company had alleged were unfair and harmful to its business. The alleged unfair practices consisted of publishing advertising that might lead consumers to think that the Vacuum Cleaner Specialty Company, Inc., was selling Hoover cleaners below list price, when actually it was another make of machine which was meant. Following the filing of the suit the defendants indicated a willingness to settle out of court and agreed to withdraw the offending advertisements. A formal agreement was drawn up, which the Federal Courts, according to the Hoover Company's statement, will enforce in case violation is proven.

Illinois Licensing and Inspection Bills Ready for Presentation to Legislature

Bills Provide that Single Registration Will Permit Work in Any Municipality in State, but Also Call for Home Rule in Matter of Inspection and Inspection Fees

THE bills prepared by the electrical industry of Illinois to govern electrical work in that state will be presented to the Legislature about the first of March, according to the announcement of the Electric Association of Chicago. The bills cover both inspection and registration. It is said they will encounter some opposition in the legislation from some of the smaller municipalities in the State due to their desire to have contractors register and pay an additional fee when they do work in a municipality outside of their home city.

The final draft of the bills, provides that a contractor must register and pay an annual registration fee of $50. This virtually amounts to State registration. He is then permitted to go to any other part of the State and by showing his registration certificate from his home town he would be automatically furnished with a permit, without charge or need of registration. His work, however, would be subject to inspection and inspection fees which the electrical commission may so establish to cover all legitimate costs. Some of the smaller municipalities in and near the larger municipalities are anxious to have the bills require additional registration in every municipality, namely that all contractors who come into their cities, towns or villages would have to pay a registration fee of $5. There are many contractors hereabouts who do work in twenty or more municipalities, and while this would not be an impossible financial burden, the matter of principle is the point which is considered by the bills' sponsors. It is pointed out that no other trade or industry in Illinois requires anyone to take out a license to operate and pay a fee in every municipality in the State.

The main features of the registration bill are given below:

"The city council in cities, and the president and board of trustees in villages shall have power to require the registration of electrical contractors, and to impose an annual registration fee of fifty dollars on each such electrical contractor; however, an electrical contractor who is registered in one city or village shall not be required by any other municipality to be registered or to pay a registration fee in such other municipality. The term 'electrical contractor' as used in this provision, means any person, firm or corporation engaged in the business of installing or altering by contract electrical equipment for the utilization of electricity supplied for light, heat and power, not including radio apparatus or equipment for wireless reception of sounds and signals, and not including apparatus, conductors and other equipment installed for or by public utilities, including common carriers, which are under the jurisdiction of the Illinois Commerce Commission, for use in their operation as public utilities; but the term 'electrical contractor' does not include employees employed by such contractor to do or supervise such work."

The bill regarding inspection covers conductors and equipment for the utilization of electricity, with the exception of radio and central station equipment. It provides that each municipality may establish an inspection department and an electrical commission of five members, one of whom must be an electrical contractor. This commission would recommend installation rules which then could be made into a local code by action of the city council. All installations would require permits from the inspection department of the municipality and would be subject to inspection. Violation of such an ordinance would be penalized by a fine of from $5 to $50.

New York State Convention at Syracuse in June

Tentative plans for the holding of the annual convention of the New York State Association of Electrical Contractors and Dealers have been announced by A. L. Bush, president of the organization. Syracuse is chosen for the meeting on June 13-14.

Granite City Association Elects Officers

At the annual election of the Master Electrical Contractors' Association of the Tri-Cities, taking in Granite City, Venice and Madison, Ill., officers for the coming year were elected as follows: M. E. Kirkpatrick, Kirkpatrick Electric Company, president; J. R. Kelahan, Peerless Electric Company, vice president; P. S. Pender, Metropolitan Electric Company, secretary; William W. Huxel, treasurer.

Further Data Asked on N. Y. Motor Sales Plan

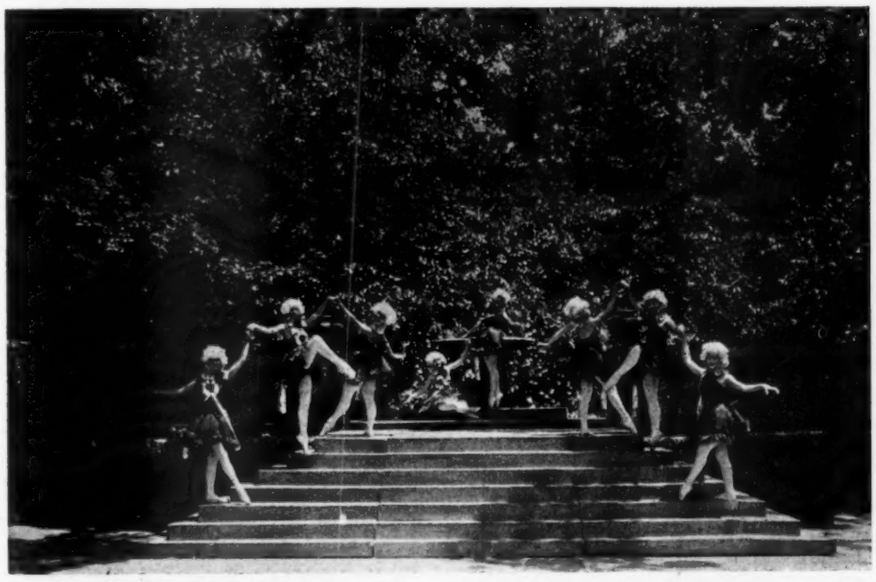
The board of governors of the New York Electrical Board of Trade, to which had been referred the motor sales policy plan of the contractors' group of the organization, decided at its January 29 meeting that more information should accompany the plan before it was presented to the motor manufacturers.

The details of the plan, which were outlined in a previous issue of THE ELECTRAGIST, were concerned with a motor sales agreement by which the contractor-dealers who handle motors would be protected against unfair competition, not only among themselves, but also from the manufacturers.

The additional information asked for includes the specific outline of the troubles which motor dealers are experiencing and which have brought about the movement for some definite policy on the sale of motors. The special committee handling this motor sales policy matter is now at work gathering this data.

St. Louis Begins Extensive Plans for Entertainment of 1927 A. E. I. Convention

General Committee Appointed by St. Louis Electrical Board of Trade to Handle Details of Sport and Entertainment Program and Act as Host to Delegates



A Scene at the St. Louis Style Show, one of the Convention Attractions

ONE of the most hospitable receptions on record is to be extended to the 1927 convention of the Association of Electragists, International, according to the announced plans of the St. Louis Electrical Board of Trade. This organization, composed of all branches of the industry in St. Louis, intends not only to arrange the entertainment program for the delegates who will be in St. Louis from August 8 to August 12, but will also act as host to the convention.

The following general committee has been appointed to handle these matters: C. H. Chapline, Rick-Chapline Electric Company, chairman; Fred B. Adam, president, Frank Adam Electric Company; C. E. Allen, district manager, Westinghouse Electric and Manufacturing Company; J. L. Buchanan, president, Wesco Supply Company; George Corrao, manager, Graybar Electric Company; C. E. Michel, sales manager, Union Electric Light and Power Company; M. J. Wolf, sales manager, Bussmann Manufacturing Company; Carl H. Christine, secretary-manager, St. Louis Electrical Board of Trade; Frederic A. Kehl, president, The Brilliant Company; Charles J. Sutter, Electragist; B. W. Frauenthal, United Railways.

Ace Section Meeting at Cleveland Has Fine Program

The annual meeting of the Ace (Northern Ohio) Section of the Association of Electragists, held at the Hotel Hollenden on February 3, in conjunction with the National Lighting Equipment Exhibition, was distinguished both by the quality of its program and the numbers in attendance. The meeting was presided over by Samuel Adams Chase of the Westinghouse company.

He emphasized the common interest of the fixture man with the electrical contractor and the electric lighting company in his remarks opening the meeting.

The tremendous possibilities of the commercial and industrial lighting field were attested by figures submitted by S. C. Hibben, of the Westinghouse Company. By means of graphs, Mr. Hibben showed that trial installations had been made for only three percent of the total number of the window-lighting prospects and that 65 percent of these trial installations had resulted in sales.

J. William Schulze, vice president of the Artistic Lighting Equipment Association, predicted that the pendulum of public spending is swinging away from the automobile and outdoor entertainment, and back toward the home.

Too little thought is being given to the possibilities of outdoor lighting, said George J. Klein, president of the Novelty Lighting Corporation, Cleveland.

National publicity is helping the dealer to sell more artistic and more expensive fixtures, stated M. D. Blitzer, vice president of the Lightolier Company, New York, but it is all lost unless the dealer carries an adequate display of fixtures and makes that display attractive.

George N. Seiss, of the Cleveland office of the Graybar Electric Company, expressed the thought that unless the distributor functions entirely as a distributor he has no right in the picture. A hopeful indication that the industry is shaking down into its proper inter-relationship, he declared, is that the contractor is selling more materials to and making more installations for the industrials.

The last speaker on the program was Laurence W. Davis, general manager of the A. E. I., who talked on the necessity for going after the rewiring market.

Pittsburgh Association Increases Its Membership

At a meeting of the Electrical Contractors' Association of Pittsburgh, held at the Hotel Henry on February 17, it was announced that the membership of the association had recently been increased to 21 and that plans were under way to further add to this number. The affair was the annual dinner of the organization and was attended by 65 persons, representing all branches of the industry.

The principal speaker of the evening was R. C. Hill, field director of the A. E. I., who declared in his talk that the rewiring of inadequately-wired buildings will be the life-saver of volume in the wiring industry.

"The trend of tomorrow," said Mr. Hill, "will be for home improvements and added conveniences. The trend in the past few years has been for things outside of the home, such as the automobile, cabaret, etc. As a nation America has today a greater income to spend per capita than the world has ever before seen. High wages have tremendously increased the number of homes which can afford automobiles, radios, electrical comforts and conveniences. And these people are spending their money in the direction where industry has sold them most completely. Better homes, better plumbing, better furnishings, better clothes, better luxuries. But how about better wiring and more of it? Are we going to continue to think that 'Wiring must be cheapened?' While other lines of industry are selling porcelain equipped bathrooms, copper screens and gutters, brass piping, oak flooring and finer materials in all other lines, are we going to think only in terms of the cheapest, poorest type of wiring, so that our price to the customer will be lower than our competitors? There should be less competition within the trade on a price basis."

Warning—Watch Out for This Man

A man by the name of E. N. Williams, representing himself as field man for the Association of Electragists, Int., has been cashing checks in the South, which have later come back marked "No funds." This man is not connected in any way with the Association of Electragists. He was given an appointment as field representative for a few days, early in February, but was almost immediately dismissed. A warning has been sent to all southern members and this means is being taken to further protect our southern readers.

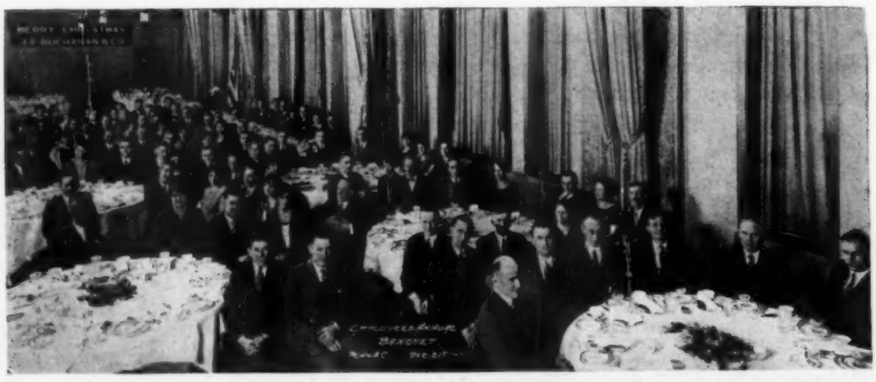
Ft. Wayne's Ban On Substandard Devices

Provisions of the Wayne (Ind.) building code electrical section which provide that the city electrical inspector must inspect and approve electrical appliances, fixtures and fittings sold here will be enforced rigidly, Paul Thiele, electrical inspector, has announced.

Dealers were given until March 1 by the inspector to close out their stocks of uninspected or poorly made fixtures and electrical supplies.

Letters will be sent to each store and firm handling such goods citing provisions of the ordinance and inspections will begin by the inspector March 1.

Many drug stores, variety stores and others handle such fixtures and fittings, Inspector Thiele said.



This is the annual employees' banquet given by J. F. Buchanan Company, Philadelphia. Over $4,000 in bonuses was distributed

Alberta Electrical Contractors' Annual Meeting

A representative gathering of the electrical contractors in the province attended the annual meeting of the Alberta Electrical Contractors' Association, held in the Palliser hotel in January. Delegates were present from Edmonton, Lethbridge, Medicine Hat, Red Deer, Banff, Cardston, Camrose and Calgary.

The association recommended that the provincial government be requested to appoint a board of examiners for the examining, licensing and regulating of electrical workers throughout the province, such board to act in consultation with the executives of the association. Further, that rules and regulations may be made for the examination of candidates for contractors' and journeymen's licenses, and to fix what fees should be paid to the government by such contractors or journeymen for the license and examinations.

Agenda for California Trade Policy Meetings

An interesting agenda has been prepared by the executive committee of the California Electragists, Southern Division, for discussion at its series of trade policy meetings. During the past months these meetings have resulted in obtaining the hearty cooperation of many jobbers in putting the trade policy into effect and ironing out problems and it is believed that further good can be accomplished by the discussion of the following topics:

A. Has the electrical contractor's credit stability improved during the summer months and what has been the effect on the general condition?

B. 1. Should jobbers assist contractors in obtaining industrial business? 2. What is your policy on the sale of electrical merchandise to industrials?

C. Is the present method of free delivery by jobbers an advantage to the contractor?

D. 1. Are the several educational campaigns carried on by the Electragists in the interest of the contractor of general benefit to the industry? 2. Should jobbers help finance this type of work by direct contribution?

E. An explanation of the need for greater sincerity and confidence between all branches of the industry.

Newark Association Elects New Officers

At the annual meeting of the Master Electricians' Association of Newark, N. J., the following officers were elected for the ensuing year: Fred Rosseter, 58 Mechanic Street, president; A. C. Grayson, 86 Park Place, vice president; Charles H. Butler, 15 Central Avenue, treasurer; Paul H. Jaehnig, 106 Academy Street, secretary, and John Caffrey, Fred Miller, H. L. Fliehman and G. E. Davis, members of the executive board.

Compulsory Automobile Insurance

A bill has been introduced in the New York Legislature for compulsory automobile insurance. This would provide for compensation for personal injuries or death resulting from the operation of a motor vehicle and the securing of payment of such compensation. It would require all motor vehicle owners to be insured.

General Electric Supplementary Compensation

Supplementary compensation totaling $1,358,669.89 was distributed in February to 30,518 factory and office employes who have been in the employ of the General Electric Company for five years or more. The distribution was based on 5 percent of the employe's earnings for the six months from July 1 to December 31, 1926. Payments were made in General Electric Employes' Securities Corporation bonds or in cash, as the employes desired.

Utah League's Lighting Bureau 1926 Record

More than $35,000 worth of commercial lighting was secured through the activities of the Lighting Service Bureau of the Electrical League of Utah, during 1926, according to the annual summary of the bureau's work, just released. Complete plans and specifications for commercial and floodlighting installations were prepared by the bureau as follows:

Total plans submitted....205—6580 Lighting outlets.	
No. installations completed by contractor, 122—5040 Lighting Outlets.	
Total cost of wiring and fixtures to consumer	$35,280.00
Average number plans per month	17
Average number lighting jobs closed per month	10
Average number of lighting outlets per job completed	41
Average cost of wiring and fixtures per job	$288.00

The types of outlets included in the above estimates are switches, wall plug receptacles, wall brackets and ceiling lights. Special purpose outlets, such as range, ironer, radio, telephone, door bells, etc., are not included.

New Electragists

The following contractor-dealers have made application and been accepted into the A. E. I. since the publication of the last list in the February issue:

CALIFORNIA

Marysville:
Gerald J. Elbert

Oxnard:
Carl W. Fischer
J. L. Mitchell
Chas. M. Sickels

San Luis Obispo:
Valley Elec. Co.

MASSACHUSETTS

Dorchester:
J. Paletz

Worcester:
Bancroft Elec. Co.

MICHIGAN

Clawson:
Clawson Elec. Shop

NEW JERSEY

Jersey City:
Superior Elec. Co.

NEW YORK

Brooklyn:
Flatbush Elec. Maintenance Co.
Greenpoint Elec. Equip. Co., Inc.

Syracuse:
Geo. W. Harris

OREGON

Portland:
Co-operative Elec. Co.
Huenergard Elec. Co.
Jaggar Sroufe Co.
Morrison Elec. Co.
J. R. Tomlinson Elec. Co.
M. J. Walsh Elec. Co.

RHODE ISLAND

Providence:
Frank P. Maguire

CANADA

Walkerville, Ontario:
Johnson-Turner Elec. Repair & Engrg. Co.

News Notes Concerning Contractor-Dealers

Oscar Fox, Hagerstown, Ind., has sold his interest in the Electric Shop to Lawrence Brankel.

An electrical shop has been established at 215 East Second Street, Drumright, Okla., by Charles F. Morgan.

C. J. Spencer has opened an electrical store and shop at 1450 Broadway, Burlingame, Cal.

Cal Ellis has established an electrical repair shop at St. Thomas, Ont., Canada.

Reopening of the Gable Electric Company, Shelbyville, Ind., with Roy Gable, the former owner, and Robert Remster as proprietors, took place recently.

B. L. Price and C. C. Merrill have established an electrical wiring and fixture store at 7305 Woodland Park Avenue, Seattle, Wash.

E. K. Downer has moved his electrical store from the Swanger Block on South Main Street, New London, Ohio, to the Barrett Block on North Main Street.

Hiram Swayze has opened a new electrical shop in Lapeer, Mich.

Edgar L. Dow has established an electrical store at 20½ Pleasant Street, Augusta, Me.

An electrical contracting business has been established in Rockford, Ill., by W. J. Scattergood and Ed Gunning, under the name of the South Rockford Electrical Contractors.

Shiras Morris

Shiras Morris, president of the Hart & Hegeman Manufacturing Company, Hartford, Conn., died on February 2 at his home. Mr. Morris had been with the Hart & Hegeman company since 1898.

News of the Manufacturers

Switch Plates

George Richards & Co., Inc., 557 West Monroe Street, Chicago, have just placed on the market a line of molded push button switch plates from one to four gangs. These plates, known as the "Hemco" molded push button wall plates, are designed to combine safety with good appearance. They are molded of bakelite and are shock-proof. The satin finish

is molded into the surface and is said to be permanent and lasting. The plates are unaffected by fumes, moisture, or climatic conditions and are spot-proof, warp-proof and tarnish-proof. They are supplied with metal screws electroplated in color to match the plate. Bakelite screws finished to match can be supplied without additional charge.

Universal Power Drive

The new "Toledo" universal power drive is a new item of the line manufactured by the Toledo Pipe Threading Machine Company, Toledo, Ohio. This new device is equipped with a ½ h. p. universal motor which will operate from a light socket on any 110-v. current. The motor is reversible, and after the thread is cut the operator backs the dies off the completed thread simply by a turn of the switch conveniently located near the driving head. It automatically slows down on the heavy pulls, speeds up on the light loads and thus assures the operator maximum efficiency at all times.

It is easily wheeled about on its wire wheels, weighs 165 lbs., is strongly built, simple in construction, easy to operate and converts hand-operated threading and cutting tools into power machines. It will operate "Toledo" tools for cutting and threading pipe up to and including 12 inches.

The power drive helper comprises a special yoke and chuck attachment that is fitted in the driving head of the universal power drive and which permits the use of pipe threaders and cutters for ½-in. to 2-in. pipe. No vise is required.

Benjamin Devices

A fibre hand portable having a floating socket and springs that protect the lamp from knocks and jars and which takes Type A lamps up to 60 watts has been put on the market by Benjamin Electric Manufacturing Company, 120 South Sangamon Street, Chicago. Five flat steel springs which clasp the lamp, and flexibility afforded by the socket not being rigidly anchored protect the lamp from jolts and thumps, while the strong fibre guard gives further protection. Being made of non-conductive materials this portable is shock-proof. Handle is of hard maple and fibre half shade keeps glare out of the user's eyes. It is made in key and keyless types.

Another new Benjamin product is a motor-driven weatherproof howler that can be heard where gongs, buzzers and other vibratory signals would be drowned out. This howler is not a siren, but gives a steady blast, a penetrating bellow that is easily heard above the roar and racket of a noisy industry. It operates on 110 volts, 60 cycles, A. C. multiple circuits and can be used for code calls.

General Application Motors

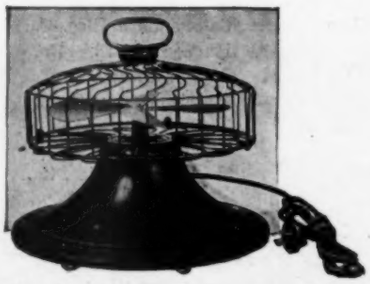
A new type of induction motor which, with its control, is simpler to operate than the ordinary squirrel cage motor and compensator, is announced by the General Electric Company. A complete line of these motors, bearing the type designation FT and ranging in ratings from 7½ to 50 h. p., has been placed on the market.

The FT motor is in general suitable for application wherever the ordinary squirrel cage induction motor with a compensator has been used. It is designed to start on full voltage giving slightly higher starting torque but approximately the same starting current as the ordinary squirrel cage induction motor started with the compensator connected to the 80 percent tap.

Control apparatus required is simple. An ordinary line switch of proper capacity can be used, but, in order to obtain proper overload and undervoltage protection, the motors are recommended for use with magnetic starting switches using push button control. Where necessary, on the larger sizes, a compensator or resistor starter may be used as in the case of the ordinary squirrel cage induction motor.

Table Fan

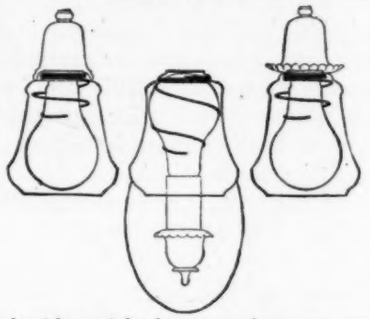
Harvey Hubbell, Inc., Bridgeport, Conn., announces the development of a new fan which will be known as the Hubbell table fan. This new fan is different from the standard type of cooling fan, the principal difference being that the blades of the Hubbell fan revolve in a horizontal instead of a vertical plane and, instead of throwing out



the air, draw the air downward to the curved base of the fan, which serves as a deflector. The advantages claimed for the fan are that it throws out a gentle breeze instead of a strong blast of air, which many people find objectionable; that its breeze is sent out horizontally in every direction and that it can be placed close to the person or persons using it without fear of harmful draft.

Shade Holder

In line with recent demand for a universal holder by which shades could be satisfactorily attached to fixtures not originally designed to accommodate lighting glassware, the holder here illustrated is offered by the Consolidated Lamp and Glass Company of Coraopolis, Pa. The holder consists of a spiral wire spring conforming to the shape of the new inside frosted Mazda lamps and having sufficient flexibility to permit its being used with 40, 50 or 60-watt sizes. A closely wound double turn of the wire seats into a recess at the neck or top of the shade. When



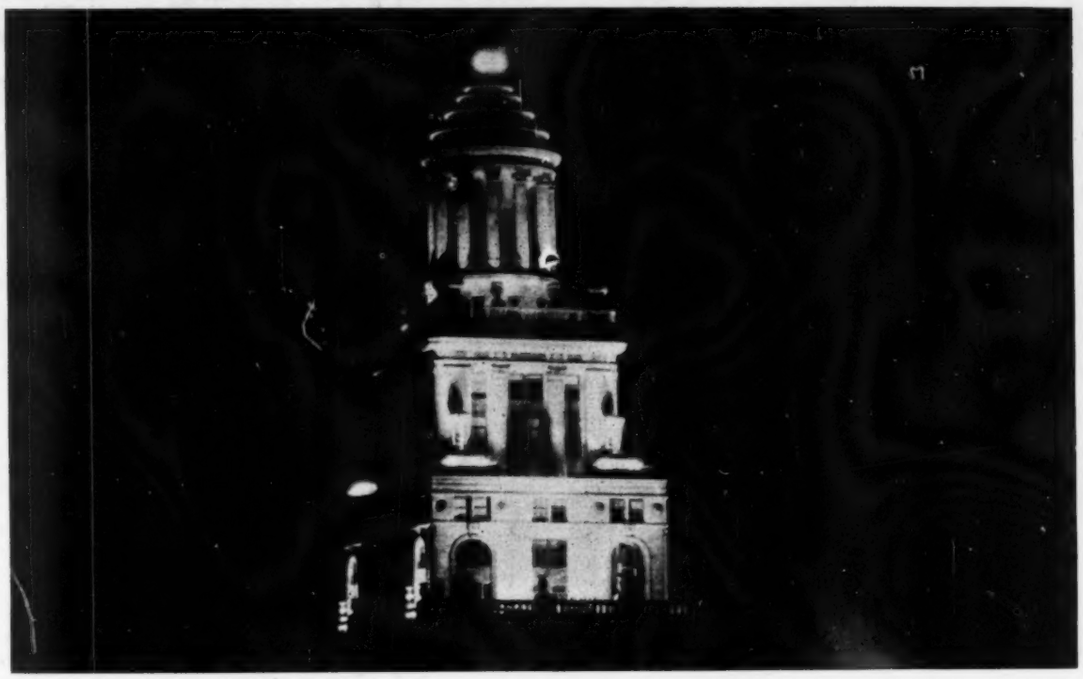
used with upright lamps, such as on candle fixtures, the spring is slipped around the lamp, the double coil resting upon the top of the bulb and providing a firm seating for the shade. When used with pendant lamp fixtures with whatever style of holder or adapter, the spring is slipped over the neck of the bulb and holds the shade securely by spring tension.

Wiring Devices

A new three-circuit switch which fits a single gang outlet box and takes a single gang flush plate has been developed by the Bryant Electric Company, Bridgeport, Conn. This switch is a tumbler device consisting of three single-pole individually controlled switch mechanisms with common feed, mounted in one porcelain cup. It has three indicating black composition handles centered vertically on a single gang flush plate. It can be used as a three-circuit electrolier switch, that is, for controlling three separate circuits with common feed, or it can control, for instance, two electrolier hall lights with two of the tumbler handles, the third operating a light in an adjoining room or porch.

Another new Bryant product is a combination flush receptacle and double-pole tumbler switch which also fits into a single gang box and takes a single gang plate. This device offers a standard wall receptacle with the added convenience of the switch. This combination device is claimed to have the further advantage that it can be used in many installations where single gang flush switches are already installed and where additional convenience outlets are needed and that it can be easily and quickly substituted in double-pole circuits for flush switches already in use.

In some installations, particularly medium sized hotels, a high "overhead" expense is often unavoidable because of the unwarranted use by guests of receptacles in the rooms for



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curling irons, heating pads and other devices which they bring with them. The Bryant Company has a new "Disappearing Door" flush receptacle and plate both single and duplex type that fits into a single gang outlet box and its installation prevents the use of the current except by means of the regular equipment in the hotel, as miscellaneous plugs cannot be used.

The "Disappearing Door" feature is another advantage minimizing the chances of short circuiting. The special plugs which fit this device have their contact arms so protected that they cannot become bent and cannot possibly cause a short circuit. It is impossible to fit any other type of plug into this receptacle.

This manufacturer has this year also placed on the market two new types of flush plates, one of moulded "Templus" a special composition that is very durable and withstands heat up to 300 degrees Fahrenheit. These special composition plates are finished in brown or black. They have mat finish centers with narrow polished beveled borders.

A new high-grade flush plate made by the company is a bronze or nickel silver plated covered with a mahogany or circassian wood inlay, with decorative borders. These plates are suitable for use in pretentious and luxurious schemes of interior decorating and finishing.

Bryant "Spar Tap" or "Spartan" plug outlet body supplied with either pull chain or key is another device to aid in the more convenient use of convenience outlets and sockets. This plug with pull chain switch screws into any socket or receptacle and enables the use of a socket lamp and the convenience of an extension cord. It is equipped with an 8-in. No. 6 chain which can be furnished when desired with a luminous pendant at a slight increase in list price. Each outlet is rated at 660 watts, 250 volts.

General Electric Refrigerators

The General Electric Company has established a separate department for the manufacture and distribution of its newly-announced electric refrigerators. The refrigeration unit of the machine, according to the company, is of a new type and is built in two sizes. The smaller unit, known as No. DR-2 with a ⅛ h. p. motor, will be used in the five- and seven-cu. ft. models. The larger unit, designated as No. DR-3, with a 1/6 h. p. motor, will be used in the nine-, twelve- and sixteen-cu. ft. models. It is planned to distribute the product through public utilities, distributor-dealers and dealers.

Steel Switchboards

A simple construction of steel switchboard panel is now being furnished by the General Electric Company. The construction is such that the new board partakes of the conventional switchboard features to an extent that makes it possible to install the new and old types together, temporarily or permanently. Combinations of steel and slate or ebony asbestos panels on one board will be practicable with the use of the new design. When installing slate or ebony asbestos panels adjacent to the new steel design the so-called angle-pipe construction of support is used; i. e., the former are mounted on light angles placed ⅛-in. inside the edges of the panels. The dimensions of the steel panels with their supporting edges are the same as those of corresponding slate or ebony asbestos panels with supporting angles. The round edge of the steel panel matches the rounded edge on the next steel panel, or the ¼- on ⅜-in. bevel on the adjacent old panel.

The new panels are made in standard widths of 16, 20, 24, 28 and 32 inches, with a standard height of 90 inches.

Timing Switches and Control Cabinets

The Crouse-Hinds Company, Syracuse, N. Y., has issued its bulletin No. 221, decribing its type B automatic variable timing switches and control cabinets, designed particularly for use with traffic signal systems. The timers are designed that the total period of time within the range of the timer may be divided to give anywhere between 25 percent and 75 percent of the total period in either direction.

The company has also issued another bulletin, No. 2097, describing new types of groundulets.

Heater Cord

The Ericson Manufacturing Company has announced the addition of a complete assembled safety heater cord to their line. The feature of this addition to the Ericson line is that the joint between the cord and the plug at each end is reinforced and protected by a safety handle. This is the weakest part of any cord and a point where in the past a great deal of trouble has originated. The safety handles provide a factor of safety, and also reinforce the connection and constitute a handle for pulling out the plug, thus relieving the small wires which compose the conductor from the strain of this service.

Manufacturing Notes

Harry D. Leffler is now associated with the Autovent Fan & Blower Company of Chicago and will work in the Central Illinois territory on plans to develop a greater volume of ventilating fan business for dealers.

Fort Wayne, Ind., is the latest community to have a Graybar Electric Company distributing house. It will be located at 921 Barr Street and Fred M. Barley has been appointed sales manager.

Joseph H. Reiss, who has been with the Peerless Lighting Company, Chicago, for ten years, has been appointed general manager of the company.

A specially designed file folder for use in the A. I. A. file is being distributed by the Federal Telephone Manufacturing Corporation. On the folder is printed complete information on the company's apartment house telephone systems.

Above is the 1927 catalogue of the Bryant Electric Company, Bridgeport, Conn., which illustrates and describes over four thousand wiring devices manufactured by the company. The listings have been simplified as much as possible for easy reference.

The Trico Fuse Manufacturing Company, Milwaukee, is now carrying a complete stock of its products at Seattle, Wash., the warehouse being in charge of their representatives, the Albert S. Knight Company, 2203 First Avenue, South.

The Pierce Electric Company, electrical jobbers, Tampa, Fla., have moved into a new three-story building, especially erected to house the growing business of the company.

J. A. White, formerly manager of the electrical department of C. A. Strelinger Company, has been appointed district manager of the new Detroit office opened by the Allen-Bradley Company, Milwaukee. Another new appointment of the company is that of George F. Pain to the managership of the Philadelphia district office.

The Roach-Appleton Manufacturing Company, Chicago, has appointed Charles Newman as Eastern sales manager of the company with offices at 45 Murray Street, New York. The company has also announced the addition of the State of Louisiana to the territory of the A. I. Clifford Company for sales representation of the "Raco" lines.

The photograph above is a rather good gauge of the growth of the electrical industry in the past ten years. It shows a recent sales conference of the Triangle Conduit Company, Brooklyn, attended by thirty-three persons. Only a decade ago this company made its start in a plant on Columbia Heights in Brooklyn, with less than 4,500 square feet of space, comprising both factory and office. Now its manufacturing space is over 250,000 square feet, with factories in Brooklyn, Chicago and Butler.